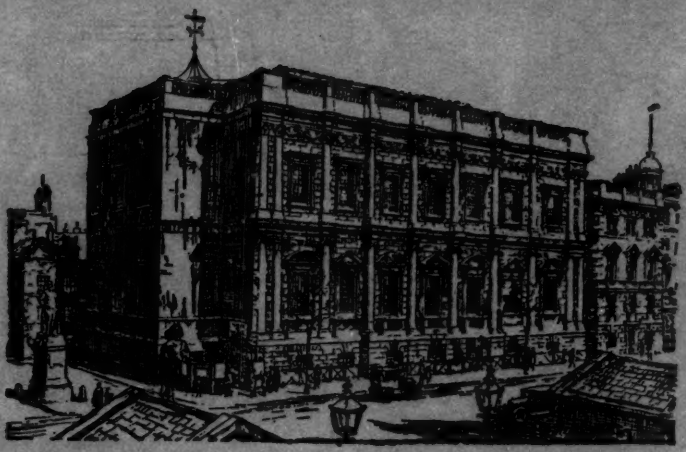
FEBRUARY, 1937

JOURNAL



Royal United Service Institution

WHITEHALL, LONDON, S.W.1

ALL RIGHTS RESERVED

PUBLISHED QUARTERLY

Price Seven Shillings and Sixpence

Advertising Manager
H. CLAYTON, 150 STRAND, W.C.2. Telephone Temple Bar 7157

By Appointment

After the Events —the PRIZES!

TROPHIES from The Goldsmiths & Silversmiths Company are worthy awards for achievement. Their distinguished design and craftsmanship will be an abiding source of pride to the winner.

May we have an opportunity of submitting a selection of Prizes for your inspection?

Regent Plate Tankards	Sterling Silver Cup	Sterling Silver Cup	Sterling Silver Cup and Cover
£1.11.6—£1.0.0	£10.10.0	£5.5.0	£9.10.0

THE

GOLDSMITHS & SILVERSMITHS COMPANY LTD

112 Regent Street, London, W.1

NO OTHER ADDRESS

Illustrated Catalogue will also gladly be sent.

By Appointment

After the Events —the PRIZES!

TROPHIES from The Goldsmiths & Silversmiths Company are worthy awards for achievement. Their distinguished design and craftsmanship will be an abiding source of pride to the winner.

May we have an opportunity of submitting a selection of Prizes for your inspection?

Regent Plate Tankards	Sterling Silver Cup	Sterling Silver Cup	Sterling Silver Cup and Cover
£1.11.6—£1.8.0	£10.10.0	£5.5.0	£9.10.0

THE
GOLDSMITHS & SILVERSMITHS COMPANY LTD

112 Regent Street, London, W.1

NO OTHER ADDRESS

Illustrated Catalogue will also gladly be sent.

EVERY PITMAN STUDENT RECEIVES THOROUGH TRAINING, INDIVIDUAL ATTENTION AND CONSTANT ENCOURAGEMENT, LEADING TO UNDOUBTED SUCCESS!

(1) At the 1935 Camberley and Quetta Examinations, 75% of the students who went up from the College were successful.

(2) At the 1934 Promotion Examination of the students who worked Pitman's full course 85% passed.

(3) At the July, 1935, Passing Out Examination (Sandhurst) 85% of our students were successful, 3rd and 13th places being gained.

The following excerpts from 1935 letters prove the individual nature and value of the courses of postal instruction provided by Sir Isaac Pitman & Sons, Ltd., for the Staff College Entrance and Promotion Examinations :—

"I shall not hesitate to recommend the College, as personally I was more than satisfied with the tuition, and with the method of instruction.

"Wishing you as high a percentage of passes in all subsequent examinations."

"I am extremely grateful to you and to the instructors for your kind help throughout the course. I hope you will convey my grateful appreciation to all those concerned with my coaching for the examination. I am very pleased to have taken the course, which I have found both instructive and helpful."

"Thank you for all you have done to help me, there is no reason why anybody taking your Courses should fail. I feel I have had the best instruction anyone could wish for. Will you please thank all your instructors for the great trouble they have taken. It is difficult to say how grateful I am for all they have done.

One excellent thing about your course is that I feel I know each of your instructors very well indeed, although I have not met them in the flesh. They seem to be able to create a personal atmosphere which is so helpful when one is working a correspondence course."

OFFICERS' VOCATIONAL TRAINING

There is always a niche in civil life for the energetic officer who is willing to undergo vocational training on or before retirement, thus adding specialist knowledge to the powers of leadership and organization acquired during his service.

If the business you propose to enter requires a knowledge of Company Management, Industrial Administration, Business Organization, Secretarial Work or Accountancy, Pitman Correspondence College can assist you with expert training.

Advice will readily be given as to the most suitable course for your requirements.

Write for Prospectus.

Principal: R.W. Holland, O.B.E., M.A., M.Sc., LL.D.

PITMAN

CORRESPONDENCE COLLEGE

Prospectus on Application

293, SOUTHAMPTON ROW, LONDON, W.C.1.

WHEREVER YOU ARE STATIONED, WE CAN HELP YOU.

FAMOUS FIGURES

"Peerless" Jim, acknowledged one of the greatest exponents of the fistic art, was born 1880. Professional from 1901. Won British Featherweight Championship Belt outright by three successive victories; also European Featherweight Championship in 1912. Greatest fights were with Abe Attell, 1909; Spike Robson, Pal Moore and Freddie Welsh, 1910.

Player's No. 3 is another figure easily remembered because of its merits, representing, as it does, a Cigarette of delightful mellowness and flavour, giving always that little extra quality so necessary for complete enjoyment by the critical smoker.

You can be sure Player's No. 3 are always fresh. All packings are now supplied with protective wrapping.

PLAYER'S **NUMBER 3**

PLAIN OR CORK-TIPPED

20 FOR 1/4 50 FOR 3/3 100 FOR 6/4 50 TINS (PLAIN ONLY) 3/4

NAAFI

N. A. A. F. I.

SERVES THE SERVICES

It belongs to them, is controlled by them, and aims at promoting their interests in every way.

THERE ARE NO SHAREHOLDERS

and all surplus revenue is returned to the Services in rebate, discount and other schemes for the benefit of the Services.

THE N.A.A.F.I. SUPPLIES EVERYTHING

but is strictly limited to dealing with Serving Members of the Regular Forces, their wives and families, and Territorials during Annual Training.

Headquarter Offices:
IMPERIAL COURT, UPPER KENNINGTON LANE, LONDON, S.E.11

ARMY & R.A.F. EXAMINATIONS

NO matter where you are stationed, the Metropolitan Services College can be of the greatest possible assistance to you in your preparation.

EXAMINATION RESULTS

The Acid Test of Tutorial Efficiency

Army Promotion: Over 15,500 PASSES in the several Sub-heads during the last 10 years and MORE SPECIAL CERTIFICATES at the last 15 Examinations than ALL other Candidates.

Staff College (Camberley and Quetta): TWO-THIRDS of the TOTAL PASSES at the examinations held during 1932–36.

R.A.F. Staff College Qualifying, 1936: ALL the R.A.F. Officers coached by the Metropolitan Services College PASSED.

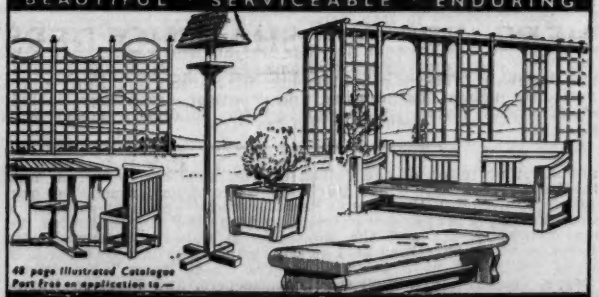
S.S.O. Examination Nov., 1935: 83 PER CENT. of M.S.C. Candidates were SUCCESSFUL.

Write TO-DAY for a copy of the College latest "Army Prospectus" or "R.A.F. Prospectus," gratis on request to Dept. M4,

METROPOLITAN SERVICES COLLEGE
ST. ALBANS——————ENGLAND

Teak Garden Furniture

BEAUTIFUL · SERVICEABLE · ENDURING



48 page Illustrated Catalogue Post Free on application to—

CASTLES' SHIPBREAKING CO. LTD.
160 Millbank, London, S.W.1

EXPERT CLEANING AND RESTORING OF

OIL PAINTINGS

ESTIMATES GIVEN FREE

FREDK B. DANIELL & SON

32 CRANBOURN STREET, LONDON, W.C.2

Established 1827

Patrons: The Royal United Service Institution and other important Public Societies, Private Collectors, and Regimental Messes.

STAFF COLLEGE
ENTRANCE EXAMINATION

Colonel J. P. VILLIERS-STUART,
C.B., D.S.O., O.B.E.,
AND
Colonel J. E. TURNER,
C.M.G., D.S.O., M.A. (Hon.),

CAMBERLEY HOUSE, PORTESBERY RD.,
CAMBERLEY, SURREY.

ALL OBLIGATORY SUBJECTS.

Prospectus on application.

Telegrams - - TURVIL, CAMBERLEY
Telephone - - - CAMBERLEY 851

— BOOKS —

Hugh Rees Ltd.

Military, Naval and General Booksellers, Stationers & Publishers

5 & 7 REGENT STREET, S.W.1

THE SOCIETY FOR NAUTICAL RESEARCH.

(FOUNDED 1910)

Patron:

H.R.H. THE DUKE OF KENT, K.G., K.T., G.C.M.G., G.C.V.O.

THE OBJECTS OF THE SOCIETY:

To encourage research into nautical antiquities, into matters relating to seafaring and ship-building in all ages and among all nations, into the language and customs of the sea, and into other subjects of nautical interest.

The Society has erected a Monument to the Van de Veldes in St. James's, Piccadilly; raised £107,000 to save Nelson's Flagship and has superintended the restoration of H.M.S. "VICTORY" to her appearance at Trafalgar; paved the way to the establishment of a National Maritime Museum at Greenwich and a Victory Museum at Portsmouth; organised Exhibitions of Nelson Relics and Naval Prints, etc. at the Guildhall, Whitechapel, Plymouth, Birkenhead and Hull; and issued sundry periodical publications dealing with Nautical Archæology, including a cheap set of official plans (ten in number) for building a model of H.M.S. "Victory."

The annual subscription of one guinea entitles members to receive admission tickets to H.M.S. "Victory," "The Mariner's Mirror" (an illustrated quarterly journal of over 100 pages), the Annual Report (100-200 pp. illustrated); to attend the Annual Meetings, which have been held at the Royal United Service Institution, Trinity House and the Royal Naval College, Greenwich, and the Annual Lectures which have been held at the Fishmongers', Clothworkers', Salters' and Drapers' Halls and have dealt with "The Great Harry," Primitive Craft, Samuel Pepys, Coastal Craft, Harrison's Timekeepers, and Flags in Marine Art.

For particulars of membership apply to—
THE DIRECTOR, NATIONAL MARITIME MUSEUM, GREENWICH, S.E.10

SCHOOL OF ORIENTAL STUDIES
(University of London)

ORIENTAL AND AFRICAN LANGUAGES

Courses in the following and many other languages are provided by the School for the special requirements of the Navy, Army and Air Force:—

Indian Languages, Chinese, Japanese, Malay,
Arabic, Persian, Turkish, Hausa, Swahili.

For further information apply to the Secretary,
SCHOOL OF ORIENTAL STUDIES, VANDON HOUSE,
Telephone: Whitehall 4735. VANDON STREET, S.W.1

RUSSIAN SCHOOLMASTER
Coaches for Army and
Russian Interpretership Exams.
T. ROMANOFF,
58, Argyle Road, West Ealing W.13

REMEMBER
Two Steeples No.83
quality when you want a good pair of socks.
FROM ALL HOSIERS

FRANCIS EDWARDS LTD.

keep a good stock of second-hand NAVAL & MILITARY BOOKS, also TRAVELS & GENERAL LITERATURE.

Catalogues sent post free on application.

83 MARYLEBONE HIGH STREET
LONDON, W.1

JOURNAL FRONTISPIECES

Reproductions of the Coloured Frontispieces published in the R.U.S.I. JOURNAL, on art paper, suitable for framing, can be supplied, post free, for **6d.** each.

R. MILNE & CO. Ltd.

ART DEALERS
PICTURE FRAME MAKERS
PICTURE RESTORERS

Specialise in SHOW CASES
FOR REGIMENTAL COLOURS, MEDALS AND RELICS OF EVERY DESCRIPTION

41 ALDWYCH, STRAND, W.C.2
Tel.: Tem. Bar 4670

PROMOTION EXAMINATIONS

Since 1922 only one failure in Examination at first attempt, and three failures in one sub-head. Some candidates averaged 80–100 per cent. in various sub-heads.

ENTRANCE INTO REGULAR ARMY FROM SUPPLEMENTARY RESERVE AND TERRITORIAL ARMY

Several second on the list including 99½ per cent. for Imperial Military Geography. One pupil failed in 10 years.

Lieut.-Colonel T. M. MACGREGOR-GREER, 112, Argyle Road, W.13
Tel.: Perivale 2621

VICKERS-CARDEN-LOYD
LIGHT TANK
EQUIPPED WITH
VICKERS-ARMSTRONGS
40mm. 50 Calibre, Q.F. S.A. GUN

Weight of Projectile	-	2 lbs. - - -	0.91 kgs.
Muzzle Velocity	- -	2,600 f.s. - -	792 m.s.
Elevation	- - - -	−10° to	+20°
Maximum Range	- -	7,437 yds. - -	6,800m.
Weight of Gun Mechanism and Muzzle Brake	- -	2cwt. 0qrs 13lbs. -	108 kgs.

The Light Tank so arranged is an ideal weapon for the engaging and destroying of strong points and hostile armoured vehicles.

VICKERS-ARMSTRONGS LIMITED

VICKERS HOUSE, BROADWAY, LONDON, S.W.1.

CONTENTS FOR FEBRUARY, 1937.

	PAGE
SECRETARY'S NOTES	i-vi
FRONTISPIECE :	—
THE ARMY IN INDIA. (*Lecture.*) By FIELD-MARSHAL SIR PHILIP CHETWODE, BT., G.C.B., O.M., G.C.S.I., K.C.M.G., D.S.O., D.C.L. ..	5
THE FIFTH ARMY IN MARCH, 1918. By BRIGADIER GENERAL SIR J. E. EDMONDS, C.B., C.M.G.	17
BRITISH MERCHANT SHIPPING TO-DAY. (*Lecture.*) By SIR ARCHIBALD HURD	32
FOOD SUPPLIES IN WAR TIME. (*Lecture.*) By SIR HERBERT MATTHEWS, KT.	53
THE ITALO-ABYSSINIAN CAMPAIGN, 1935–36. (*Lecture.*) By LIEUT.-COLONEL A. C. ARNOLD, C.B.E., M.C.	71
THE ROYAL AIR FORCE. By F. F. G.	89
THE TREND OF NAVAL CONSTRUCTION	103
THE TREND OF DEVELOPMENT IN AIRCRAFT. SOME IMPRESSIONS OF THE PARIS EXHIBITION, 1936. By FLYING OFFICER A. C. CLINTON, A.F.R.Ae.S., R.A.F.O.	113
ROAD AND RAIL IN WAR. By BREVET-COLONEL I. SIMSON, R.E.	125
COMPANY TRAINING. By MAJOR E. R. MAHONY, IRISH GUARDS	147
FOREIGN NAVAL AIR SERVICES. By "NAVARINO"	157

Continued on page 8.

THE IMPORTANCE OF KNOWING

HOW TO LEARN LANGUAGES

The Direct Method the Only Method.

The only satisfactory method of learning a foreign language is the direct method. In other words, you must learn French in French, German in German, Spanish in Spanish, Italian in Italian. That is the Pelman method and it is the only way.

It all depends upon the method. People fail to learn foreign languages because they have adopted the wrong method. Given the right method any normal man or woman can learn French, German, Italian or Spanish with surprising ease, without boredom and drudgery and in a comparatively short time.

No Vocabularies to be Learnt Parrot-Fashion.

It naturally follows from this that the old-fashioned method of memorising—parrot-fashion—long lists of foreign words is entirely abolished when you learn a language by the "direct" way. You get to know each word by using it and by using it in different ways and relationships. No long months trying to memorise vocabularies and dreary rules! You are guided naturally and instinctively, as a child is taught to quickly grasp words and their meanings, their fitness, their use—*and their pronunciation.*

Grammatical Difficulties and Drudgeries Eliminated.

Another consequence of this new method is that it practically eliminates the difficulties and drudgeries of learning complicated grammatical rules and exceptions. According to the old method you learned the grammar first—and many people never got any further, if as far. But the new method takes you straight to the language itself, and you learn the grammar as you go along and almost without any conscious effort.

A Four-Fold Method.

A few further points should be mentioned. The new method teaches you not only to read a foreign language, but to write it, to speak it, and to understand it thoroughly and efficiently. The eye is employed as well as the ear, and the hand as well as the voice. No mechanical device can possibly give you that thorough mastery of a foreign language which is obtained when so many senses are employed as they are in the Pelman Language Courses.

WRITE FOR FREE BOOK TO-DAY.

This wonderful new method of learning languages is explained in the little book entitled "The Gift of Tongues." There are four editions of this book. One for each language—

French, Spanish, German, Italian,
Also Courses in Afrikaans and Urdu.

You can have a free copy of any one of these, together with a specimen lesson, by writing for it to-day to :

PELMAN INSTITUTE,
129, Languages House, Bloomsbury Street, London, W.C.1.

When writing you are particularly asked to state which edition (French, German, Spanish or Italian) you want, and it will be sent you by return, free and post free. Write or call to-day.

PELMAN (OVERSEAS) INSTITUTES : PARIS, 80 Boulevard Haussmann. NEW YORK, 271 North Avenue, New Rochelle. MELBOURNE, 396 Flinders Lane. JOHANNESBURG, P.O. Box 4928. DURBAN, Natal Bank Chambers (P.O. Box 1489). DELHI, 10 Alipore Road. CALCUTTA, 102 Clive Street. AMSTERDAM, Damrak 68. JAVA, Malabarweg, Malang.

CONTENTS—continued from page 7. PAGE

Search and Patrol over the Sea. By Flight-Lieutenant A. H. Willetts, R.A.F. 165

A Group Mess for Officers. By Captain E. Foster Hall, M.C. .. 171

Some more Aspects of the Recruiting Problem. By Major F. S. B. Grotrian, M.C., R.A. 175

Uniforms, Equipment, Standards and Colours of the British Army.. 181

The International Situation 182

The Powers and Spain 182

The Spanish Civil War 185

Italy and the Mediterranean. By Major E. W. Polson Newman 189

The Anglo-Egyptian Treaty 192

Correspondence 194

Navy Notes 200

Army Notes 212

Air Notes 222

Reviews of Books 234

Additions to the Library 242

Carlisle & Gregson

JIMMY'S

(Established over 50 Years)

5, Lexham Gardens, Kensington, W.8

STAFF COLLEGES, PROMOTION,

All SERVICES Entrance Examinations

:: and UNIVERSITIES. ::

Telegraphic Address: "Lexjam, Kens, London."

Telephone: Western 1287.

JOURNAL

of the

Royal United Service Institution

Published by Authority of the Council.

Postal Address: Whitehall, London, S.W.1
Telephone No. Whitehall 5854.
Telegraphic Address: "Russatus, Parl, London."

Vol. LXXXII. FEBRUARY, 1937. No. 525

Advertising Manager:
H. CLAYTON, 150 STRAND, LONDON, W.C.2
Telephone: Temple Bar 7157.

ROYAL UNITED SERVICE INSTITUTION

FOR

"THE PROMOTION AND ADVANCEMENT OF NAVAL AND MILITARY SCIENCE AND LITERATURE." *Royal Charter, 22nd February, 1860 (23 Vict.).*

PATRON:

HIS MAJESTY KING GEORGE VI.

PRESIDENT:

Field-Marshal H.R.H. The DUKE OF CONNAUGHT, K.G., K.T., K.P., G.C.B. G.C.S.I., G.C.M.G., G.C.I.E., G.C.V.O., G.B.E., V.D., T.D.

VICE-PRESIDENTS:

Field-Marshal *Sir* PHILIP CHETWODE, Bart., G.C.B., O.M., G.C.S.I., K.C.M.G., D.S.O.

Admiral *Sir* GEORGE P. W. HOPE, K.C.B., K.C.M.G.

Field-Marshal *Sir* CLAUD W. JACOB, G.C.B., G.C.S.I., K.C.M.G.

Brigadier-General The *Earl of* LUCAN, K.B.E., C.B., T.D.

Field-Marshal *Sir* ARCHIBALD A. MONTGOMERY-MASSINGBERD, G.C.B., K.C.M.G., LL.D.

Marshal of the Royal Air Force The *Viscount* TRENCHARD, G.C.B., G.C.V.O., D.S.O., D.C.L., LL.D.

Admiral *Sir* R. G. O. TUPPER, G.B.E., K.C.B., C.V.O.

ELECTED MEMBERS OF COUNCIL:

Royal Navy

Admiral The *Earl of* CORK AND ORRERY, G.C.B., G.C.V.O. (*Vice-Chairman of the Council*).

Rear-Admiral W. N. CUSTANCE.

Rear-Admiral B. C. WATSON, D.S.O.

Admiral *Sir* WILLIAM GOODENOUGH, G.C.B., M.V.O.

Royal Marines

Lieut.-General W. W. GODFREY, C.B., C.M.G., R.M.

Royal Naval Reserve

Captain *Sir* D. WILSON-BARKER, Kt., R.D., R.N.R.

Royal Naval Volunteer Reserve

Commodore The *Earl* HOWE, C.B.E., V.D., R.N.V.R.

Regular Army

General *Sir* J. F. NOEL BIRCH, G.B.E., K.C.B., K.C.M.G.

Lieutenant-General *Sir* C. J. C. GRANT, K.C.B., K.C.V.O., C.B., D.S.O.

Major-General J. R. M. MINSHULL-FORD, C.B., D.S.O., M.C.

Brigadier R. P. PAKENHAM-WALSH, M.C.

Colonel G. E. C. RASCH, C.V.O., D.S.O.

General *Sir* FELIX READY, G.B.E., K.C.B., C.S.I., C.M.G., D.S.O. (*Chairman of the Council*).

General *Sir* ROBERT WHIGHAM, G.C.B., K.C.M.G., D.S.O.

Militia.

Brigadier-General S. E. MASSY-LLOYD, C.B.E.

Territorial Army

Colonel The *Viscount* COBHAM, C.B., T.D.
Colonel J. JOSSELYN, C.M.G., D.S.O., O.B.E., T.D.
Colonel F. D. SAMUEL, D.S.O., T.D.
Colonel B. ABEL SMITH, D.S.O., M.C., T.D., A.D.C.

Indian Army

Major-General R. C. WILSON, C.B., D.S.O., M.C.

Royal Air Force

Air Chief Marshal *Sir* HUGH C. T. DOWDING, K.C.B., C.M.G.

REPRESENTATIVE MEMBERS

ADMIRALTY.

Director of Naval Intelligence : Rear-Admiral J. A. G. TROUP, C.B.

WAR OFFICE.

Director of Staff Duties : Major-General E. K. SQUIRES, D.S.O., M.C.

AIR MINISTRY.

Director of Staff Duties : Air Commodore W. SHOLTO DOUGLAS, M.C., D.F.C., *p.s.a.*

EX-OFFICIO MEMBERS

First Sea Lord : Admiral of the Fleet *Sir* A. E. M. CHATFIELD, G.C.B., K.C.M.G., C.V.O., D.C.L.

Chief of the Imperial General Staff : Field-Marshal *Sir* CYRIL J. DEVERELL, G.C.B., K.B.E.

Chief of the Air Staff : Marshal of the Royal Air Force *Sir* E. L. ELLINGTON, G.C.B., C.M.G., C.B.E.

Director-General of the Territorial Army : General *Sir* W. M. ST. G. KIRKE, K.C.B., C.M.G., D.S.O.

President of the Royal Naval College, Greenwich : Vice-Admiral *Sir* R. M. COLVIN, K.B.E., C.B.

Commandant of the Imperial Defence College : Air Marshal *Sir* ARTHUR M. LONGMORE K.C.B., D.S.O.

Director of the Royal Naval Staff College : Rear-Admiral B. C. WATSON, D.S.O.

Commandant of the Staff College, Camberley : Major-General The *Viscount* GORT, V.C., C.B.E., D.S.O., M.V.O., M.C.

Commandant of the R.A.F. Staff College, Andover : Air Vice-Marshal A. S. BARRATT, C.M.G., M.C., *p.s.a.*

HONORARY MEMBERS OF THE COUNCIL

Major-General H. C. THACKER, C.B., C.M.G., D.S.O. (Canada).
General *Sir* HENRY G. CHAUVEL, G.C.M.G., K.C.B. (Australia).
Major-General *Sir* A. H. RUSSELL, K.C.B., K.C.M.G. (New Zealand).
General *The Right Hon.* J. C. SMUTS, P.C., C.H. (South Africa).
Lieut.-General H.H. THE MAHARAJAH OF BIKANER, G.C.S.I., G.C.I.E., G.C.V.O., G.B.E., K.C.B. (India).

STAFF

Secretary, Editor and Chief Executive Officer : Captain E. ALTHAM, C.B., R.N.
Librarian and Curator : Colonel E. L. HUGHES, D.S.O., O.B.E.
Assistant Editor : Lieut.-Colonel A. G. ARMSTRONG, *p.s.c.*, I.A.
Assistant Executive Officer : Captain S. J. PARKER, M.C., D.C.M.
Assistant Librarian : Paymaster Commander J. HOGG, R.N.

Auditors : MESSRS. BARTON, MAYHEW & CO.
Alderman's House, Bishopsgate, E.C.2.

Bankers : ROYAL BANK OF SCOTLAND, DRUMMOND'S BRANCH,
Charing Cross, S.W.1.

MEMBERSHIP

Full particulars of Membership with alternative forms for Bankers' Orders can be obtained on application to "The Secretary, Royal United Service Institution, Whitehall, London, S.W.1."

Commissioned Officers of *all* H.M. fighting Services, including those of the Dominions, Colonies and India, and Midshipmen of the Royal Navy, Royal Naval Reserve and Royal Naval Volunteer Reserve, are eligible for membership without proposal or ballot.

Naval, Military, and Air Force Cadets are eligible on the recommendation of their Commanding Officers.

An Officers' Mess may subscribe to the JOURNAL, but is *not* eligible for membership.

TERMS OF SUBSCRIPTION

ANNUAL MEMBERS—Subscription £1 5s. od., payable on joining and on 1st January yearly. (NOTE.—The Entrance Fee has been temporarily suspended.)

LIFE MEMBERS.

(*a*) £20 os. od., payable in one sum or :

(*b*) £21 os. od., payable in four instalments of Five Guineas, the first on joining, the others on 1st January of each succeeding year.

The above rates of subscription entitle Members to the loan of four volumes at a time from the Library, provided they are at Home or at those stations abroad where arrangements exist for forwarding books.

It is important that Officers joining should furnish full and clear particulars of their Name, Rank, Ship, Regiment or R.A.F. Squadron, etc., and the address to which they wish their JOURNALS sent.

Officers of the Indian, Dominion and Colonial Naval, Military, and Air Forces temporarily in the United Kingdom may become members for a period of six months on payment of Ten Shillings and Sixpence, or One Guinea for twelve months. The additional subscription to the Lending Library is Five Shillings for six months.

THE INSTITUTION

The Royal United Service Institution is situated just below the War Office in Whitehall. It has the best professional Library in the United Kingdom ; a Lecture Theatre where an autumn and winter session of lectures is devoted to subjects of current or historical Service interest. The Reading and Smoking Rooms are provided with the leading papers, periodicals and writing materials.

The Institution is open daily from 10 a.m. to 7 p.m., except Sunday, Christmas Day and Good Friday.

THE JOURNAL

The R.U.S.I. JOURNAL is published quarterly and sent post free to Members in any part of the world. Copies may be purchased by non-members, price 7/6.

THE MUSEUM

Situated in the Banqueting Hall of the old Palace of Whitehall (1622), with its magnificent Rubens ceiling, the R.U.S. Museum is a treasure house of relics and mementoes of great victories and renowned warriors. There is also a most valuable collection of Uniforms, Medals, Ship, Tank, and Aircraft Models, and models of the battles of Trafalgar and Waterloo.

For Members and their friends, there are private entrances to the Museum from the Institution.

H.M. Forces in uniform are admitted free at the public entrance.

Admission to the general public is 1s. ; Wednesday and Saturday after Noon, 6d.

SECRETARY'S NOTES

February, 1937.

HIS MAJESTY THE KING

His Majesty King George VI has been graciously pleased to become a Patron of the Institution.

The Institution has been honoured by the Patronage of the Sovereign since it was founded in the reign of King William IV.

CORONATION ARRANGEMENTS

Details of the arrangements which the Council are making for Members and their guests to witness the Coronation Procession down Whitehall on 12th May next were published in the Secretary's Notes of the JOURNAL for November, 1936. There was also enclosed in that number a form for application for tickets; copies can be sent to any Member who may not have received them, on application to the Secretary.

It is anticipated that approximately 370 seats will be available on the stands to be erected in and around the Banqueting Hall. The Ballot will take place on 1st March, and Members who have applied for seats may expect to receive a notice as to whether they have been successful or not as soon afterwards as possible.

Anniversary Meeting.

The Anniversary Meeting will be held at 3.30 p.m. on Tuesday, 2nd March, 1937.

The Council will present their Annual Report and Accounts, and there will be an election to fill the vacancies on the Council.

The Gold Medal and Trench Gascoigne Prizes will be presented.

Copies of the Annual Report and Accounts can be obtained on application to the Secretary.

Council.

Rear-Admiral B. C. Watson, D.S.O., has been elected a member of the Council in the vacancy caused by the resignation of Vice-Admiral B. W. M. Fairbairn, C.B.E.

New Members.

The following officers joined the Institution during the months of November, December, and January:—

ROYAL NAVY

Lieutenant G. D. Anderson, R.N.
Commander E. M. Haes, R.N.
Lieutenant W. F. Skelton, R.N.
Sub-Lieutenant N. Bowden-Smith, R.N.
Lieutenant O. Patch, Royal Marines.
Lieutenant R. E. N. Kearney, R.N.
Lieutenant R. G. L. Pennell, R.N.
Sub-Lieutenant I. L. M. McGeoch, R.N.
Lieutenant W. L. M. Brown, R.N.
Captain Bertram H. Smith, C.B.E., R.N.

Lieutenant-Commander G. A. Thring, R.N.
Lieutenant C. E. A. Owen, R.N.
Lieutenant E. E. Mayo, R.A.N.
Lieutenant-Commander N. A. Copeman, R.N.
Captain F. F. Clark, Royal Marines.
Lieutenant-Commander R. L. S. Gaisford, R.N.
Commander W. B. Rowbotham, R.N.
Captain R. S. G. Nicholson, D.S.C., R.N.
Lieutenant G. V. W. Harrison, R.N.R.
Surgeon Lieutenant-Commander S. Jenkinson, R.N.
Lieutenant J. M. Sharpey-Schafer, R.N.
Lieutenant-Commander J. W. Havers, R.N.
Sub-Lieutenant J. G. Wells, R.N.
Commander C. E. F. Hall, R.N.
Sub-Lieutenant F. B. P. Brayne-Nicholls, R.N.
Lieutenant J. E. S. Bush, R.N.
Commander J. J. Weld, M.V.O., R.N.
Captain H. P. K. Oram, R.N.
Lieutenant-Commander (E) H. W. Head, R.N.
Lieutenant M. F. L. Beebee, R.N.

ARMY

Captain A. S. Gemmell, 12th Royal Lancers.
Captain R. I. Poston, M.D., R.A.M.C. (T.A.).
Lieutenant L. S. Spearman, 2nd Battn. 9th Jat Regiment, I.A.
Captain F. L. Evans, 8th Battn. The Lancashire Fusiliers (T.A.R.O.).
Major R. G. Tudor, M.C., The King's Regiment.
Lieutenant I. S. Graham, The Seaforth Highlanders.
Lieutenant-Colonel M. C. Raymond, C.I.E., M.C., late Poona Horse and Burma Military Police.
Lieutenant J. R. Robertson-McIsaac, The Gordon Highlanders.
2nd Lieutenant C. E. R. Darby, Straits Settlements Volunteer Force.
Captain R. E. Dennys, The Green Howards.
Lieutenant-Colonel D. A. Brown, M.C., Royal Signals.
Bt. Lieutenant-Colonel W. C. Holden, D.S.O., M.C., Royal Artillery.
Bt. Major R. V. Shepherd, late West Yorkshire Regiment.
2nd Lieutenant I. Hirst, 7th Battn. The Duke of Wellington's Regiment (T.A.)
Major L. P. Anderson, late The Prince of Wales's Volunteers.
2nd Lieutenant P. Q. Logan, The South Staffordshire Regiment.
Lieutenant J. M. Lind, The Cameronians (Scottish Rifles).
Captain H. R. Beauchamp, The Leicestershire Regiment.
Captain H. M. C. Jones-Mortimer, Welsh Guards.
Captain H. B. M. Groves, M.C., Royal Tank Corps.
Major N. C. M. MacMahon, O.B.E., late Royal Field Artillery (T.F.).
2nd Lieutenant A. H. S. Coombe-Tennant, Welsh Guards.
2nd Lieutenant A. A. Duncan, Welsh Guards.
2nd Lieutenant J. A. Meade, Welsh Guards.
2nd Lieutenant H. J. Moore-Gwyn, Welsh Guards.
Lieutenant R. E. W. Sale, Welsh Guards.
2nd Lieutenant R. C. Sharples, Welsh Guards.
Captain K. L. Beddington, Royal Artillery.

Captain E. Clarke, R.A.S.C.
Captain J. E. Hugo, Royal Tank Corps.
Lieutenant G. Mellor, Royal Corps of Signals.
2nd Lieutenant J. B. R. Nicholson, I.A.
Lieutenant E. G. C. T. Willey, University of London O.T.C.
Lieutenant S. E. H. Baillie, Grenadier Guards.
Bt. Colonel V. E. Cotton, O.B.E., T.D., Royal Artillery (T.A.).
Lieutenant J. L. Gerson, Royal Artillery (T.A.R.O.).
Captain L. T. Grove, Royal Engineers.
Lieutenant R. G. S. Hobbs, Royal Horse Artillery.
Lieutenant C. V. King, The Devonshire Regiment.
Captain W. G. D. Knapton, Royal Engineers.
Major B. H. C. Lea-Wilson, R.A.M.C.
Lieutenant-Colonel H. F. G. Letson, M.C., Canadian O.T.C.
Colonel B. C. T. Paget, D.S.O., M.C., General Staff.
Lieutenant I. L. Phillips, 1st Herts Regiment (T.A.).
Major-General A. C. Temperley, C.B., C.M.G., D.S.O.
2nd Lieutenant K. L. Vink, The South Staffordshire Regiment.
Captain G. Benson, The Royal Ulster Rifles.
Lieutenant F. C. S. Hipwood, The Prince of Wales's Volunteers.
Lieutenant G. C. Luck, Royal Artillery.
Major J. W. Nelson, M.C., Royal Artillery.
Lieutenant D. G. B. Ridout, K.O.Y.L.I.
Lieutenant E. A. W. Williams, 60th Rifles.
2nd Lieutenant F. A. Giles, 3/8th Punjab Regiment, I.A.
Lieutenant-Colonel St. J. D. Arcedeckne-Butler, Royal Corps of Signals.
Lieutenant D. G. Davies-Scourfield, Welsh Guards.
2nd Lieutenant A. A. Halliley, I.A.
2nd Lieutenant P. G. Molloy, The Somerset Light Infantry.
Lieutenant C. H. Dewhurst, The Royal Sussex Regiment.
Lieutenant K. E. F. Millar, M.B.E., The Border Regiment.
Captain J. P. O'Brien Twohig, The West Yorkshire Regiment.
2nd Lieutenant P. Bosanquet, The Queens Royal Regiment.
Captain G. C. Lowry, University of London O.T.C.
Captain R. R. N. Pedder, The Highland Light Infantry.
Lieutenant M. R. J. H. Thomson, M.C., The Royal Scots Fusiliers.
2nd Lieutenant A. T. Bourne, Royal Artillery.
Lieutenant-Colonel H. C. Servaes, Royal Artillery (T.A.).
Lieutenant-Colonel G. C. Kemp, M.C., Royal Artillery.
Lieutenant E. L. Martin, Royal Tank Corps.
Lieutenant-Colonel C. Newton-Davis, M.C., M.B., Indian Medical Service.
2nd Lieutenant F. R. Price, The Prince of Wales's Volunteers.
Major R. D. Robertson, The Gordon Highlanders.
Lieutenant E. W. D. Stillwell, 24th London Regiment (The Queen's).
Major E. H. C. Harris, Royal Corps of Signals.
Lieutenant C. M. Rogerson, 8th Battn. The Hampshire Regiment.
Major Durham S. Matthews, O.B.E., late 17th Lancers.
Major A. M. B. Norman, The Gordon Highlanders.
Major R. G. Leonard, 2/5th Royal Gurkha Rifles F.F., I.A.
Lieutenant-Colonel R. A. Spencer, D.S.O., Royal Artillery.
2nd Lieutenant W. R. Waller, Royal Artillery.

Major-General C. C. Luard.
Major-General H. Needham, C.B., C.M.G., D.S.O.
Captain B. P. Hughes, Royal Artillery.
Lieutenant W. J. Fletcher, Royal Artillery.
Captain L. D. M. Patterson, Royal Signals.
2nd Lieutenant H. C. H. Crofton, Royal Artillery.
Lieutenant C. J. Deedes, K.O.Y.L.I.
Captain P. J. Kennedy, R.I.A.S.C.
Gentleman Cadet P. C. Swallow.
2nd Lieutenant D. G. Parker, The Argyll and Sutherland Highlanders (S.R.).

ROYAL AIR FORCE

Flight-Lieutenant G. Stanley Brown, R.A.F.O.
Flight-Lieutenant J. M. Cohu, R.A.F.
Flight-Lieutenant J. Marson, R.A.F.
Wing-Commander R. E. G. Fulljames, R.A.F.
Flight-Lieutenant C. H. B. Bullock, R.A.F.
Flight-Lieutenant C. F. H. Grace, R.A.F.
Squadron-Leader A. B. Ellwood, D.S.C., R.A.F.

DEPUTY MASTER, TRINITY HOUSE

Captain A. R. H. Morrell.

Suspension of Entrance Fee

As a temporary measure and especially to enable as large a number of officers as possible to avail themselves of the facilities offered by the Institution during the period while His Majesty's Forces are being increased, the Entrance Fee has been suspended.

Officers of all ranks whose names appear on the current official lists can, therefore, join the Institution by paying the annual subscription of £1 5s. only. Membership will date from the 1st January.

Gold Medal Essay (Military) 1936

The following essays have been received :—

"For if the trumpet give an uncertain sound . . ."
"Onward."
"An Old World Tale—The Maiden Blushed."

Result of the 1936 Competition

The following is the result of the 1936 Competition for the Gold Medal of the Royal United Service Institution and the Trench Gascoigne Prize :—

Gold Medal and First Trench Gascoigne Prize :—Wing Commander J. C. Slessor, M.C., R.A.F.

Second Trench Gascoigne Prize :—Lieut.-Colonel G. C. Shaw, R.A.O.C.

The Council appreciate the trouble taken by the remainder of the competitors, who were (in alphabetical order) :—

Bt. Lieut.-Colonel E. L. M. Burns, O.B.E., M.C., Royal Canadian Engineers.
Captain G. H. Clifton, M.C., N.Z.S.C.
Lieut.-Colonel H. A. B. Johnson, 8th K.G.O. Light Cavalry, I.A.
Major D. A. L. Wade, M.C., Royal Signals.
Captain C. F. Webb, F.R.G.S., The Manchester Regiment.
Major J. G. O. Whitehead, M.C., Royal Engineers.

Change of Address

Members are reminded that they are responsible for keeping the Secretary informed of any change of address. Non-receipt of the JOURNAL is almost invariably attributable to the fact that the Member has not notified his movements.

Members' Letters

Members may have letters and telegrams addressed to them at the Institution, but the Council accept no responsibility for their custody, and no arrangements can be made for forwarding them.

LIBRARY

Facilities for Borrowing Books

The special attention of Members who are paying the comprehensive annual subscription of £1 5s. od., is invited to the fact that they are thereby entitled to the full privileges of the Lending Library without further charge. These include the right to have sent to them not more than four volumes at a time on loan, the Member paying postage both ways.

Old Members who have not wished to conform to the new arrangement and who are still paying the original subscription of £1 1s. od., must pay an additional subscription of 10s. per annum in order to belong to the Lending Library.
All members are, of course, free to use the Library when they visit the Institution.

Rules Governing Return of Books

The attention of Members is invited to the following Regulations governing the retention and return of books :—

(1) Certain books, for which there is a special demand, must not be retained longer than a fortnight after the date of receipt. A notice to this effect will be found in the book.

(2) In the United Kingdom.—Books must normally be returned within one month of the date of issue ; but the Librarian is authorized to make extensions of one month at a time on application by a Member, up to a maximum of three months from the date of issue, if the work is not required by another Member.

(3) Stations Abroad.—When books are sent to Members abroad the same rules apply as for the United Kingdom, except that " the date of receipt is substituted for " the date of issue."

Defacement of Books

Cases have occurred of books which have been out on loan being returned with numerous marginal notes. Any Member who so defaces a book will be called upon to replace it by a new copy.

JOURNAL

May Issue

The May number of the JOURNAL will be published on the 1st of that month instead of the 15th, in order that it may appear before the date of the Coronation.

Orders for Supply

Subscribers are recommended to place orders for the supply of the JOURNAL

direct with the Royal United Service Institution, thereby obviating delay in delivery. A suitable order form can be provided on request.

MUSEUM

Cavalry Exhibition

A Special Cavalry Exhibition was opened in the Museum on 1st February. It illustrates the history and dress of our Cavalry from the time of Cromwell to the present day, and includes a fine collection of pictures from the Crookshank Collection, and uniforms; also medals and personal relics of the most famous Cavalry leaders, many of the latter specially lent by their descendants.

Coronation Exhibition

A Special Exhibition of exceptional interest is being arranged for the Coronation. An announcement of its features will be made in the May JOURNAL.

Additions

(8884) Sketch of the Battle of Talavera.—Presented by Dr. Powell.
(8885) Officer's head-dress, Rifle Brigade.—Presented by Mrs. A. B. Williams.
(8886) Officer's uniform, Skinner's Horse.—Presented by Mrs. Russell.
(8887) Model of H.M.S. "Thetis."—Presented by Colonel J. Y. H. Ridout.
(8888) Officer's belt buckle, 85th Regiment.
(8889) Busby, 103rd Bombay Fusiliers, 1879–1881.—Presented by Major N. A. D. Armstrong.
(8890) Two meerschaum pipes, formerly the property of Cornet John Carnegie, Royal North British Regiment of Dragoons.—Presented by A. S. Carnegie.
(8891) Spanish uniform, and collection of swords, formerly worn by H.R.H. the Duke of Connaught.—Presented by H.R.H. the Duke of Connaught.
(8892) Nelson medallion and fourteen prints.—Presented by General d'Osnobichine.
(8893) Specimen of a naval cat-'o-nine-tails.—Presented by the Lords Commissioners of the Admiralty.
(8894) Lithograph—"Field Day" India.
(8895) Belt buckle, Coldstream Guards.—Presented by Lieut.-General Sir C. Grant.
(8896) Helmet of the Hanoverian Garde du Corps, 1822.—Presented by General D. d'Osnobichine.

Loans

(3640) Medallion commemorating the services of Viscount Richard Molesworth.—Lent by Brigadier General E. Molesworth.
(3641) Uniform of the Sussex Yeomanry, 1795.—Lent by Captain Sir H. Shiffner, Bt.
(3642) Pistol which formerly belonged to General Sir H. Dalrymple-White when a Cornet in the Inniskilling Dragoons, 1838.—Lent by Lieut.-Colonel Sir G. Dalrymple-White, Bt.

Attendance

The amount taken for admission during the past quarter was:—

£93 18s. 6d. in November.
£67 11s. 6d. in December.
£92 19s. 0d. in January.

Photograph by Peter North

HIS MAJESTY KING GEORGE VI

His Majesty King George VI has been graciously pleased to become Patron of the Royal United Service Institution

---

The Institution has been honoured by the patronage of the Sovereign since it was founded in the reign of William IV

THE KING'S MESSAGE

TO

THE ROYAL NAVY

AND OTHER NAVAL FORCES OF THE EMPIRE.

The King, on his Accession to the Throne, has addressed the following message to the Royal Navy and other Naval Forces of the Empire :—

On my accession to the Throne, I recall with pride that, as my dear Father did before me, I received my early training in the Royal Navy.

It has been my privilege to serve as a Naval Officer both in peace and in war ; at Jutland, the greatest sea battle of modern times, I saw for myself in action the maintenance of those great traditions which are the inheritance of British seamen.

It is my intention always to keep the closest touch with all ranks and ratings of the Naval Forces throughout the Empire, and with all matters affecting them. I shall do so in the sure knowledge that they will be worthy of the implicit trust placed in them by their fellow-countrymen, and that, in their hands, the honour of the British Navies will be upheld.

GEORGE R.I.

THE KING'S MESSAGE

TO

THE ARMY

AND OTHER MILITARY FORCES OF THE CROWN.

The King, on his Accession to the Throne, has addressed the following message to the Army and other Military Forces of the Crown :—

On my accession to the Throne, I wish to assure all ranks of the Army that their welfare will be one of my chief concerns. It was a notable event in my life, four years ago, when my Father appointed me a Major-General in the Army, and that association has only served to enhance my admiration for the courageous and efficient manner in which their duties, however onerous they may prove, are invariably undertaken.

The task that lies before me is fraught with difficulties, but I know well that the heavy burden of my responsibilities will be lightened by the faithful allegiance of all ranks of the Military Forces of the Crown throughout the Empire.

GEORGE R.I.

THE KING'S MESSAGE

TO

THE ROYAL AIR FORCE

AND OTHER AIR FORCES OF THE EMPIRE.

The King, on his Accession to the Throne, has addressed the following message to the Royal Air Force and other Air Forces of the Empire :—

On my accession to the Throne, I hasten to assure the Air Forces at home and overseas that I look forward to the maintenance of my close connection with them, which has been such a happy feature of my life ever since I became a junior Officer in the Service in 1918, and served with the Independent Air Force in France.

As Air Chief Marshal, I have watched with keen appreciation the way in which the Service has proved more than equal to the many tasks which a rapid expansion has imposed upon it.

I know full well that the Air Forces of the Empire will maintain to the full the great traditions that they have already established, combining with the highest efficiency and zeal a fine chivalry of service and a deep and steadfast loyalty.

GEORGE R.I.

THE JOURNAL
OF THE
Royal United Service Institution

Vol. LXXXII. FEBRUARY, 1937 No. 525.

[Authors alone are responsible for the contents of their respective Papers. All communications, except those for perusal by the Editor only, should be addressed to the Secretary, Royal United Service Institution.]

THE ARMY IN INDIA

By FIELD-MARSHAL SIR PHILIP CHETWODE, Bt., G.C.B., O.M., G.C.S.I., K.C.M.G., D.S.O., D.C.L.

On Wednesday, 4th November, 1936.

THE MOST HONOURABLE THE MARQUESS OF WILLINGDON, P.C., G.C.S.I., G.C.M.G., G.C.I.E., G.B.E., in the Chair.

THE CHAIRMAN: I know perfectly well that my old friend and my late colleague in India—Field-Marshal Sir Philip Chetwode—needs no introduction from me or from anyone else. His great public services for his King, his country, and the British Empire are sufficiently well known to you all. I might be tempted to-day to say something of a period of five years during which I was Viceroy of India and he was Commander-in-Chief; but I am going to refrain in the first place because I think I had better spare Sir Philip's youthful blushes and in the second place because I am rather inclined to think that I might be poaching on his oratorical preserves this afternoon if I did. I would only then make the following observation: during the period of five years in which we were very closely and intimately associated I can say with absolute truth that on no great political or administrative subject in India did Sir Philip and I ever disagree. I should like further to thank him most cordially here this afternoon for the constant untiring and unswerving support which he always gave me during those five years, some of which were of considerable difficulty and even sometimes of rather a critical character. Last but not least, I think it must be some considerable satisfaction to him to feel and to know, as I know well, that when he gave up his post as Commander-in-Chief in India he did so with the knowledge (and I hope he appreciated it) that he left the Army in India in as sound, as satisfactory, as efficient and as loyal a condition as it ever has been in its long history. (Applause).

LECTURE.

THE Council asked me to address you on the Army in India, which I had the honour to command from 1930 to 1935. As defence in India is in the hands of the Viceroy and Governor-General, whose executive officer is the C.-in-C., and as no man ever had a more sympathetic and understanding Viceroy than Lord Willingdon, I am indeed fortunate in having him here in the Chair this afternoon.

I realize that it would be hopeless to compress into one lecture even the shortest review of a history which may be said to have begun in 1600, and which is so crowded with incident, heroism, and achievement. It is indeed the history of India herself from 1600 onwards, and in those three hundred odd years the Army has been the principal factor in bringing order out of chaos, and peace, security and justice to a continent of more than 350,000,000 people. I shall, therefore, only refer very briefly to past history and come as soon as I can to modern times, and to what is of such vast importance to India and to the Empire, the India and the Army in India of to-morrow.

The first thing you notice when you read the history of the British in India is that we did not go there in the first instance on conquest bent, nor was our appearance there in any way connected with the Government of the day, or with the idea of acquiring territory in the East. We came there frankly for trade and commerce only, as purely private people or companies of merchant adventurers. It was indeed many years before we had in India any armed men at all, except for the 20 to 25 men we were permitted to keep at our factories and trading stations by leave of the local princes and rulers of the day. But those small groups of armed men were in effect the germ of the great army in India which eventually materialized. The forces maintained by the East India Company, and afterwards by the Crown, gradually increased, as we were forced to maintain our foothold and our trade against ever-increasing opposition from other European nations, especially the French, and from the native rulers.

Our enemies and detractors are in the habit of declaring that we went to India in the first instance on military conquest bent, and that we are still an " alien " Power who seized India by force and have held it by force ever since. That, of course, is quite untrue. We went to India, as we went to so many other places in the world, for trade, and in India for many years, as we always have been, we were *Bunniahs* first, and only soldiers when we could not help it. Nor are we any more aliens than the Mohammedans who conquered a very great part of India. Eventually we had to fight, and fight desperately hard, to maintain

our position and our trade, especially against France, who, had affairs in Europe gone otherwise, might have driven us from India, and who was not very far from doing so as it was. We also had much fighting against Indian Princes and rulers, but although it was sometimes serious enough, the old inability of India to combine prevented it from menacing our hold over the country as it might have done. In such a slight sketch of past history it is enough to say that before we established ourselves, we had to fight against Portuguese, Dutch, French, Mahrattas (three times), Mysore (twice), Scindia and Holkar, the Gurkhas, Burma (twice), Afghanistan (three times), and the Sikhs (twice), to mention only the most important, and omitting the Mutiny.

There have been six great periods or landmarks in the history of the Army in India, and a seventh which is now at this moment in process of solution.

The first period was the inception of armed force in India, beginning with the factory guards, and growing gradually to the three Presidency Armies of the East India Company which, by the Mutiny, had grown to formidable proportions.

The second was the period of reorganization of the Army rendered necessary by the Mutiny, and the taking over of the Army in India by the Crown and the amalgamation of the Royal and Company's Armies.

The third was the reorganization in Lord Roberts' time, the abolition of the Presidency Armies, and the first steps in modernization.

The fourth was the reorganization by Lord Kitchener after the Boer War, and the further regrouping of the Army and modernization of staff and commands.

The fifth was the reorganization consequent upon the failure of the system to meet the needs of the Great War.

The sixth was the further modernization of the Army after the War. The advent of the Air Force, the inception of mechanization, and the earliest attempts at Indianization, and the continuation of the Road Policy on the North-West Frontier, for which Lord Willingdon is responsible.

The seventh is now on the knees of the Gods, and in process of gradual solution. The extension of Indianization, in conformity with the extension of self-government; further mechanization of rearward services; the advent of the tank, and an attempt to follow the home Army in its re-grouping and reorganization for modern war, a most difficult task.

At the instance of Lord Willingdon the Home Government have at last agreed that the so-called Backward Policy on the North-West

Frontier is a mistake, and both Governments have decided that it is our business to administer the King's Dominions right up to his frontiers, with no intervening no-man's-land, and that the extension of the Road Policy is the best means of doing so. If Lord Willingdon is remembered in history for one thing more than another, it will be for that broad and statesmanlike decision, which in the future will save so many millions of money and thousands of lives. He is one of those men of vision, who have grasped that the India of the past has been to us a great imperial asset, in riches, power, prestige and man power, both in peace and war, but he has seen that you cannot educate many millions of their people and let them see our free institutions and expect them to rest content for ever with only a small say in their own affairs. If that is not recognized and carried out, India in time of trouble may be to us not a source of strength but a grave commitment. The League of Nations takes no account of human nature, and the natural passions of hate and ambition. The Indian reforms take every account of both, the natural hates of man which lead to war, and the natural ambitions of man to say what shall happen in his own house.

I wish I had time to refer even briefly to the exploits of the Army in India under such leaders as Clive, Wellington, and that little man who is still the idol of the Army, Lord Roberts; but I can only enumerate a few essential facts and dates before I pass on to to-day. The Portuguese, who first landed at Calicut in 1498 with thirteen ships and twelve hundred soldiers, were the first Europeans in India, and for a century, 1500 to 1600, dominated the Eastern trade. The Dutch challenged them, and in 1602 the United Dutch East India Company of the Netherlands was started, and held forts and factories in India, Ceylon, Sumatra, Persian Gulf, and in 1608 founded Batavia in Java, and eventually ousted the Portuguese almost entirely. We did not appear much till Queen Elizabeth gave a charter to the Company of Merchant Adventurers trading to the East, in 1600. In 1608 Captain Hawkins got a concession from Jehangir at Agra to establish a factory at Surat. In 1639 Francis Day founded Madras and built Fort St. George. In 1651 the British reached Hugli. In 1661 Charles II obtained Bombay as part of the marriage dowry of the Infanta Katherine. In 1695 Indian soldiers were first enlisted. In 1756, a very important date, Suraj ud Dowleh succeeded his father as the last great Nawab of Bengal. In pursuit of a relative, who had escaped his vengeance, he marched on Calcutta. Most of the British fled, but those who remained became the victims of that atrocious act known as "The Black Hole of Calcutta." Fortunately Clive had just returned to Madras, and a squadron of British ships under Admiral Watson was in the Roads. He and Clive sailed at once with what troops they could find and recaptured Calcutta and

Chandanagore. Finally he gave battle to the Nawab at Plassey, and with 900 Europeans, 2,000 Sepoys, and 8 guns, he defeated a force of 35,000 foot, 15,000 horse and 50 guns. Included in his force were the 39th (The Dorsetshire Regiment), who to this day bear the proud motto of " Primus in Indis." That battle undoubtedly laid the foundation of the British Empire in India, 23rd June, 1757. From the position of our trading centres we see how the three great Presidencies grew up naturally, and how in the absence of any real communications, either postal or road, each Presidency had to create and maintain its own army. From that grew up three large Presidency armies with all their attendant evils and disadvantages, which did not cease to exist till Lord Roberts drove the first nail in their coffin, which was finally closed and buried by Lord Kitchener.

The Company's forces gradually grew till in 1808 they amounted to 24,500 Europeans and 150,000 native soldiers, while just before the Mutiny they had increased to 38,000 Europeans and 348,000 Indians, with 530 guns, truly a magnificent establishment, outwardly worthy of the great Empire we had founded in India, but inwardly unsound. In 1857 came the Mutiny, a discreditable page in our history. Many of the officers were slack and inefficient, and their sources of information bad. We should have known about the state of affairs and taken suitable steps. That unfortunate rebellion and the repression and suspicion which arose from it put back the clock of political advancement for 30 years. In 1858 the Crown took over the whole responsibility for the government and defence of India, and the Company's armies were gradually amalgamated with the Royal Army, the artillery being removed and handed over to the British only. Fortunately the Madras and Bombay armies had remained loyal, and so had the Sikhs, our former enemies. In 1863 the system as originated by Clive was reintroduced and only a few British officers were posted to each unit for command and administration, the actual command of companies and troops being left to native officers. A new spirit was breathed into the Army by giving the Commandant greater powers, greater freedom, and the full support of authority. That system has lasted till to-day, and I say without fear of contradiction that the association of British officers with their Indian officers and men has been the most ideal military partnership in the world's history. It is based on complete mutual trust, confidence, and admiration, and has stood the test of hundreds of campaigns and stricken fields. In 1891 Lord Roberts unified the triplicate Army Department into one under the supreme Government and fused the three Staff Corps, the whole army coming under the Governor-General and C.-in-C.

After the Boer War Lord Kitchener reorganized the Army, and as

elsewhere the Division came to be the British unit for war, trained in peace by its own leaders. He renumbered the whole Army and narrowed enlistment to the war-like races only. But even Kitchener was not powerful enough to abolish the Sillidar system, which was so cheap and, up to a point, efficient. Under it the native army provided its own horses, clothing, equipment, food and even built their own houses, on a contract basis, so that the usual administrative services for food, transport, remounts, clothing and equipment, did not exist except for European troops. He fought with Curzon and won, over the question of the Military Member of Council being a soldier junior to the C.-in-C. He became Military Member himself, and so it has remained ever since. He also started making India independent of outside sources for her military requirements, and established his powder factory at Wellington, his gun, rifle, machine-gun and shell factory at Cossipore; his small arms ammunition factory at Poona; his wagon factory at Jubblepore; his clothing, saddlery and boot factory at Cawnpore.

Then came the World War, in which India rendered unforgettable service to the Empire. Her troops served on all fronts, and stood in the breach until we trained our young men to take their places in the ranks. But the system broke down under the strain. Long service and no reserves proved utterly unsuitable for heavy casualties. Her administrative services hardly existed in a modern sense, and her arms and equipment were much behind the times.

A complete reorganization has now taken place. Half the cavalry has been abolished, a large reduction of British troops has taken place, and the regimental system [1] has been introduced into India. The divisional areas have been readjusted; the administrative services modernized and brought up to date, and the mechanization of rearward services has commenced. The tank has made its appearance. The Royal Air Force have taken their place, and a very large one, in the defence of the frontiers of India, and the army has been definitely divided into covering troops, war divisions and internal security army. Now we are confronted with the difficulty of following England in the further modernization of the army. The Home authorities have created machine-gun battalions, tank battalions, light divisions, and other things such as the almost complete mechanization of cavalry, which, though suitable for European war, are in some cases of little or no value in India, where on the Frontier, and especially in internal security, heads still count.

[1] Infantry battalions are formed in groups of—as a rule—five "active" battalions and one training (or depot) battalion. The group of six battalions constitutes a regiment within which all British and Indian officers and other ranks circulate freely as required from battalion to battalion.

Now I will take you round a map of India and give you very briefly the tasks of the defence forces of India to-day. India is as large as Europe without Russia; its area is 1,805,000 square miles, with a population of 352,000,000. There are 220 spoken languages, and nine principal religions, two of which—Muslim and Hindu—are constantly at daggers drawn. The Bhuddists, Sikhs, Jains, Christians, Parsees and Animists are not of much consequence in the internal security problem. At the most only seven or eight per cent. of the population are even literate. They are, in addition to the main communal differences, much split by the caste system. They are the easiest people in the world to rouse to fury on religious and even less important questions. The first business of the defence forces is the duty of keeping this vast continent quiet, and being ready to move at a moment's notice to take an absolutely neutral attitude in any riot, disturbance or unrest which may occur at five minutes notice anywhere in India. For that reason there are hardly any British troops on the frontier; the great majority being kept for internal security work. In connection with this, one fact bulks very largely. There are 40,000 miles of railway in India, 4,000 of which are vital to the security of India and the prevention of invasion. The reason is that India, as I have said, now makes ninety per cent. of her military requirements herself—in fact, everything except motors and aeroplanes—and if those 4,000 miles of railway between the factories and the army on the frontier, or between the great ports and the frontier, were cut or badly damaged it would cause the greatest inconvenience and difficulty.

The next task of the defence forces is the maintenance of four war divisions ready and up to date to carry out India's part in what is known as the minor task of keeping the frontier quiet and preventing the Afghans from invading India; and in the major task to hold the fort until reinforced from other parts of the Empire. Two of these divisions are close behind the covering troops, one a little bit further back, and a fourth far away at Secunderabad in the South.

What we may call the principal task of the Army and Air Force in India is keeping the King's peace on the North-West Frontier and ensuring the uninterrupted passage of the war divisions on their tasks should they have to go beyond the frontier. The frontier of India and Burma is more than 4,000 miles long, but fortunately much of it is not important from the military point of view. All Burma is thickly forested hills, deeply intersected by great rivers which are formidable military obstacles. No possible enemy has roads or railways leading towards it, and even if they had, could only pass to Burma in single file for two or three months in the year. The greater part of the frontier

of India itself is guarded by the loftiest chain of mountains in the world ; passable in single file by a few passes only, which are closed by snow for the better part of the year. But for 600 miles from Chitral to Quetta the frontier is vital to the security of India and the Empire. Through the various passes of the Khyber, Kurram, Peiwar Kotal, Tochi, Gumal, and the Khojak, the invading hordes from Greece and Asia have poured throughout the centuries. The North-West Frontier is inhabited by what are probably the finest natural fighting men in the world—fanatical and easily roused—who for centuries have lived by raiding their peaceful neighbours. They could, if they all rose together, put something like half a million men into the field, armed for the most part with modern rifles, and highly skilled in the use of ground.

Two things have made all the difference to our hold over the frontier of late years. The first thing is the advent of the air arm. In many cases, by taking swift action in a few hours instead of the weeks that it might have taken ground troops, aeroplanes have crushed out incipient trouble which, had it spread, would have involved a serious campaign. The other is the Road Policy which was initiated after the War. The great circular road was then built in Waziristan, since when our expenditure on military operations has dropped from lakhs of rupees a year to a few hundred, and the saving of lives has been equally great. That road system is now linked from Chitral to Quetta and means that, if trouble occurs, troops can be put on many parts of the frontier in as many days as it used to take months in the past. Lord Willingdon's policy will, we hope, result in similar roads being built before long in the Tirah and in the Mohmand country. When that happens our problems on the frontier will be quartered. Beyond that frontier lies Afghanistan, at present friendly to us. But the North-West Frontier is Muslim ; so are the Afghans ; so is Turkestan ; so is Persia ; so is Iraq ; so are Arabia and North Africa : a great block of people who profess a very fanatical faith and who might only require a cause, an opportunity, and a leader to repeat those invasions which have happened so often before.

Before I leave the tasks of the Army in India, I would draw your attention to the fact that there are six hundred Native States—one-third of India in area and population—through which most of our vital communications pass. While we control their exterior policy, they are to a large extent independent and hold their lands by charter and treaty. Beyond a few State troops, not many of which are very highly efficient, they take no part either with men or money in the defence of India. But the Army in India ensures their safety just as it does that of British India.

Then I would draw your attention to the map of Afghanistan and

the Russian frontier. Fifty years ago, if Russia thought of invading India, she had only one railway to do it with, the Trans-Caspian; and everything had to be transhipped across that sea. The railway terminated at Khushk Post, on the Afghan frontier, and from there to Chaman, in India, was 370 miles of mere track. Now that railway has been extended through Bokhara to Karshi, to Kerki on the Oxus, and from there along that river to Termez, and on again by Faizabad to the frontier of Chinese Turkestan. The main railway now runs through Samarkhand to Tashkent, near which it branches off, one to the North-West, the Orenburg–Tashkent Railway, to Russia and Moscow; and another, the Turk–Sib Railway, to Siberia. The Afghan frontier, therefore, is now completely surrounded by railways, and Russia can reach her from three different directions. And the railway tapping the black cotton soil near the Chinese frontier can bring corn for the use of any army from a few hundred miles off where it used to be thousands.

The tasks of the defence forces in India are so formidable and so vital to the Empire that we should be very sure we run no risk of being unable to fulfil them. Indianization is only in its infancy; you have the best fighting material you could wish for, and many of the young men who are taking commissions through the Indian Military College are excellent specimens, but there are not nearly enough of them. The great families of India with military traditions do not as yet take service in the Army, and only a few of the war-like classes are sufficiently educated to be officers.

As I have said, the frontier of India is an imperial affair, and I venture to think it should be considered as such and remain an imperial responsibility until we are absolutely and perfectly certain the Indians are fit to take over the responsibility for us. It rests with the Indians themselves. I believe they have got the material and could do it if they wished. Till then we must hold the frontier, and complete Indianization cannot become a fact.

DISCUSSION.

MAJOR-GENERAL SIR ALFRED KNOX: I should like to ask two questions. First with regard to Indianization—of which Sir Philip spoke, I believe, not too enthusiastically—does he really think, visualizing affairs as a soldier and not as a politician that within any reasonable time—say forty or fifty years—one of these Indianized units officered say by Sikhs or Mahrattas with a large part of the rank and file consisting of Pathans would be of any real use (and in fact not a nuisance) in trying to quell a communal riot in Bombay or in taking part in an expedition to suppress the tribes of the North-West Frontier?

The other question is about the British Army in India. As Sir Philip Chetwode said, and as we all know, the British Army in India is a very large charge on the revenues of the country. We all know too that in India there is no reserve of

taxable capacity. We must expect the Indian politicians—if they are like those in this and in other countries—to get in by lavish promises of social reform. There is no possible way of their getting money for those social reforms except by compelling the Government to cut down the expenditure on Defence, of which the most expensive item is the cost of the British units in India; and from what I hear in the War Office about the stagnation of recruiting in this country, if India is going to have as large an Army in occupation in the future as she has now, she will have to pay more for it in future, or else we shall have to abandon the voluntary system. I want to know whether Sir Philip thinks that the Government of India will be strong enough to withstand the constant pressure of these politicians to economize on Defence and to give the money to no doubt very desirable social reforms?

LIEUT.-GENERAL O. C. BORRETT: My excuse for rising is that I spent six years up in the North-West Frontier of India. The Lecturer made the statement that the organization of the British Army at home will not fit in with the organization of the Army in India for the reason that machine-gun battalions are of no use on the Frontier of India. For six years I commanded a brigade on the Frontier of India, and I offered at one time to give up all my Lewis guns if I was only given a machine-gun battalion. I maintain that machine guns are of vast importance on the North-West Frontier of India. The organization which has just been brought in by the Chief of the Imperial General Staff makes these British machine-gun battalions into Divisional troops, and there is no reason for the criticism that British troops sit behind and shoot over the heads of the Indian troops, because the brigade should always have a rifle battalion of British troops in it, and the Divisional troops would have a machine-gun battalion.

I came away from India in 1927, but I believe it was Lord Rawlinson, under Lord Halifax, who was the originator of the Road Policy in India. We called it in those days "Rawly's policy." He built the roads in Waziristan; he projected the road from Rasmak to Wana and on to Quetta; and he also made the statement, either in Delhi or in writing, to the tribesmen that we never wanted to go into their country, but if we did so we would make roads and stay there.

THE LECTURER:

The first question was whether I thought that in any reasonable time—say, forty years—the Indianized part of the Army will, in effect, be able to take their place. Nothing would induce me to prophesy about what the Indianized portion of the Army will be like in forty years. I think that it will be a great deal better than many people expect—and I believe that is the opinion of those who have seen it. The young officer is improving every day. At the present moment the fighting races in the ranks have quite taken to some of these young officers, especially if they belong to the fighting races themselves. The whole question is one of officers—whether we can get those of good family to come in. It is an immense experiment, and I believe that if it is carefully handled it will be more of a success than we think. At first, those men will be entrusted with minor tasks, such as the guarding of the railways, and so on. Several units have taken part in campaigns already, and the Indianized units have done quite well. We have had no cases of young men failing when employed on the Frontier. They will gradually be promoted to more responsible tasks.

The second question was whether, when the Indian got more power, he would not want naturally, as most politicians do, to take the larger part of the revenue

for what he calls nation-building activities. Undoubtedly he will; but I will give you two reasons why he will be checked in that. One is that the whole of defence is left in the hands of the Viceroy complete. He will be solely responsible for defence, and he will have the power to insist that he gets what money he considers necessary for the safety of India. The second reason is that three parts of India are afraid of the North-West Frontier, and they are just as much against having an inefficient Army guarding that Frontier as you and I. The last thing they want is another invasion through there. They want to be left alone to get on with their political business, and they will not allow their Army to take it over until we tell them that they are efficient enough to do so.

MAJOR-GENERAL SIR ALFRED KNOX: My point is that while the machinery leaves it in the hands of the Viceroy, it would be an impossible position that the Viceroy should be constantly at war with his politicians.

THE LECTURER: Not so much as you think. He is constantly at war with them now, but when they get provincial devolution for the first time they will have responsibilities which they have never had before; and they will be turned out—not by you or me—but by their own people if they do not have efficiency. They will be so busy with that that they will be only too glad if the defence of their country is in safe hands until they are quite certain that it can be put into other hands. They are not fools; they are very clever men.

SIR ALFRED KNOX: The expenditure on the British Army will have to go up enormously, unless you get a local service Army for India.

THE LECTURER: Why do you say it will have to go up?

SIR ALFRED KNOX: Because if you are going to get recruits here under the voluntary system you will have to give greater inducements than hitherto; and the chief reason is that people do not like going to India.

THE LECTURER: I do not think that is it. That is entering into another question. I do not think the question of pay or of not liking to go to India is the big reason in stopping recruiting. I admit that both those questions have a great effect, but what is the big thing in connection with recruiting now is that the Air Force and the Navy both give a better profession to a man, and he has also a much better chance of employment in civil life afterwards. The young man of to-day is educated; he knows what he is talking about, and is not the sort of fellow who in the past could only make his mark on the pay-list. He thinks that if he enters the Army he is not getting the same chance of a career as he can get in other places, and until that is recognized and something is done on the lines of the German plan—by which every young man when he finishes his service is given a job on the railways or in other State services—we shall not get him.

You said just now that we might have to have a long-service Army for India. That is possible. Conscription is often talked about, but you cannot have conscription for over-seas service, for two reasons: one is that you cannot banish a man overseas except by sentence of a Court; the other is that you cannot conscript men for more than two years at the outside—and that is more than most nations do. By the time a man had done his drills, and taken a month going out to India and a month coming back, there would be only about a year for him to serve in India: you cannot expect India to pay for men who are only going to serve her for a year. You might have some form of compulsion for reserve services—that looks like coming, but then you will have to have a voluntary army for India and a long-service army, and that will double the cost. It means that every man with 21 years' service has to have a pension, and India may object to that.

With regard to General Borrett's remarks about the machine gun, nobody is more convinced than I am of the value of the machine gun on the North-West Frontier, but my point was that in addition to the machine gun you must have "heads." It is "heads" that count. You cannot have machine-gun battalions to look after internal security: you cannot use machine guns against rioters who are rioting merely because they believe in their religion. Another thing is that you have to have entirely new barracks for them, because they have entirely different vehicles, different numbers, different everything else, and that means probably that you have to keep them in one or two stations only, with the result that they can only be used for internal security in certain places, if at all. The whole object of our system in India is to be able to pass a battalion from internal security work to the Frontier and from the Frontier back again.

LIEUT.-GENERAL BORRETT: I cannot see why they should not do internal security work, as they do in China.

THE LECTURER: All I can say is that if you were offered a machine-gun battalion or a rifle battalion to look after a big riot in Bombay, you would be bound to choose the latter, for the simple reason that the machine-gun battalion would not cover sufficient ground. There would not be enough men.

LIEUT.-GENERAL BORRETT: They have already got twelve machine guns in those battalions in India.

THE LECTURER: Of course. I do not think it is worth while entering into a rather technical argument, but you will find that everybody who has to do with internal security in India says they will not fit in with the work.

You said that Lord Rawlinson initiated the Road Policy. That is true. I never for a moment meant to convey that Lord Willingdon *initiated* that policy. What I claim for Lord Willingdon is that he has got the Governments in both countries at last to agree that the Forward Policy is right and to go through with it. Lord Rawlinson was the first man who insisted on the Government carrying out a Road Policy that was worth anything, and where we used to spend crores of rupees a year on military expeditions in Waziristan we do not spend a hundred now. It was Lord Willingdon who got it accepted as a fixed policy by H.M. Government and by the Government of India.

THE CHAIRMAN:

Let me say once again how delighted I have been to have been present here to-day, and I am sure you will all agree in giving Sir Philip Chetwode a most hearty vote of thanks for his most interesting lecture.

The customary votes of thanks to the Lecturer and Chairman were carried by acclamation.

THE FIFTH ARMY IN MARCH, 1918

By Brigadier-General Sir J. E. Edmonds, C.B., C.M.G.

THE origin of the reflections on the fighting reputation of the Fifth Army of March, 1918, appears to have been its change of name. When General Sir Henry Rawlinson superseded General Sir Hubert Gough, he altered the name of the Fifth Army to Fourth (such changes were not permitted in the French or German Armies), and the Fifth Army disappeared. The divisions of which it had been composed remained, however, in the line, and continued fighting gallantly for many days. The supposed defeat of this Army seemed to be confirmed by the removal of its Commander from France. Certain persons had for a long time been carrying on an agitation to get rid of General Gough, which the Commander-in-Chief had resisted, and it no doubt suited them to declare that the Fifth Army was defeated, or even annihilated, so that they could with an appearance of justice accomplish his supersession. The fact remains that for a long time the Fifth Army, as well as its Commander, was under a cloud. Even many well-read people to-day believe that the Fifth Army was scattered and that General Rawlinson led up a new force, his old Fourth Army of the Somme, to take its place. The circumstances in which the Fifth Army were situated before the 21st March, 1918, and the course of the battle up to the 26th March, have been related at length in the " Official History of the War, 1918," Volume I, published two years ago. The continuation of the fighting up to the 30th April against the German offensive will be found in " 1918," Volume II, now on the eve of publication. The narrative in these volumes, being the official record, goes into considerable detail. This will be found dull, if not repulsive, by many readers who were too young to participate in the battle ; they require some simpler introduction to the great events of those days. At the request of the Editor of the Journal, the principal factors in the story are here briefly set forth.

The collapse of Russia made it fairly certain that the Germans would try in 1918 to strike a decisive blow on the Western Front to end the War. During the winter of 1917–18 the French Government had been insistent that the British Army should take over more of the front. They argued that their armies had suffered grievous losses in 1914, 1915,

1916 and 1917; that the man-power of France was nearly exhausted; that the French were holding a greater length of front than the British; and that there was about a million (actually 966,673) trained men in Great Britain and Ireland, besides another half million partly trained men under arms. Field-Marshal Sir Douglas Haig, deprived of five of his sixty-two divisions (excluding the cavalry) owing to the needs of the Italians after their crushing defeat at Caporetto on the 24th October, 1917, was unwilling to extend his line, which, as General Pétain admitted, represented the most active and the most vital part of the Allied front. The British War Cabinet agreed in principle to the extension at a conference at which the Commander-in-Chief was not present, and without even consulting him. When the result was communicated to him, he recommended the War Cabinet to refuse to agree to the detailed proposal and requested that he might be relieved of responsibility for any unfortunate results which might follow if his recommendation was not accepted. It has been represented that Sir Douglas Haig not only agreed to take over more of the line, but made arrangements with General Pétain of his own volition to do so. This is not the case. It will be sufficient to quote the "French Official History" (Tome vi, Vol. I, p. 181) in disproof. It says:—

"Dès le début de l'offensive allemande en Italie, le Maréchal Haig ne cachait pas, en effet, sa vive répugnance à étendre désormais sa droite pour nous relever."

To give authority to the decision made in London, the Versailles Supreme War Council, composed of politicians, sanctioned the extension: actually of thirty-seven miles more than General Pétain required. The British Army was nevertheless forced to add about thirty miles to its hundred miles of front. Half of the increase was taken over 10th–14th January, and the rest 26th–30th January (see Sketch 1 in the "Official History, 1918," Vol. I).[1] As to the state of the defences of this new piece of front, one French witness will be sufficient. M. Paul Maze (in "A Frenchman in Khaki," p. 263) has written:—

"The sectors taken over had been quiet fronts, and were in a neglected state. A tenant who knows his lease is up does not bother to repaint his house or install more bathrooms, and so the French Third Army left the line with little evidence of defensive preparations for their successors—all the work remained for the Fifth Army to do."

The acceptance of a greater length of front—and that additional front in a neglected condition—called for an augmentation of the British forces, especially as a large detachment had been sent to Italy.

[1] The sketches in this volume give a good idea of what was planned and what happened, and should, if possible, be consulted whilst reading this article.

The War Cabinet, however, did not provide that increase of strength, and even failed to bring the existing divisions up to establishment. At the beginning of 1918 the British Armies on the Western Front (including the detachment in Italy) were about 100,000 weaker in fighting troops, mostly infantry, than in January, 1917. Sir Douglas Haig reported this to H.M. King George V as well as to the War Office. It has nevertheless been represented that the Armies were stronger than in 1917. The ration strength was slightly greater because the non-combatant department known as " Transportation " had, in the twelve months, increased in numbers, but the combatant strength was lower. The War Office told Sir Douglas Haig that his deficiency of 75,000 infantrymen might by the 31st October, 1918, rise to 259,000, or even more. The Ministry of National Service stated that it would not be able to find more than 100,000 men when 615,000 men were demanded by the British Expeditionary Force for 1918. The total reinforcements sent to France in 1918 between 21st March and 31st August amounted to 644,000. Many of them were certainly below the usual standard; but it would seem that, had General Sir William Robertson's advice been followed, the armies in France could have been reinforced up to establishment during January–March, 1918, and kept up to establishment. Indeed, several complete divisions from the " sideshows " might, as they were later, have been sent to France.

It has been suggested that the Government had lost faith in Sir Douglas Haig, but dared not remove him in the face of the confidence which his troops and the public felt in him, so, to reduce him to strategic impotence, regardless of the cause, refused him the reinforcements he required. To meet the deficiency in France without sending reinforcements, a committee on man-power, without a professional soldier on it, advised the Government that divisions should be reduced from twelve to nine battalions. The French and Germans had made this reduction in infantry from 1915 onwards—at the same time increasing the fire power of a division by the addition of artillery and machine guns. With every prospect of heavy fighting in a few weeks, the Army Council protested in vain against this scheme " as taking an unreasonably grave risk of losing the War and sacrificing to no purpose the British Army on the Western Front." The Canadian, Australian and New Zealand troops declined to make the change. The reorganization of divisions was begun on the 29th January, and completed by the 4th March (25th February in the Fifth Army). In all, one hundred and fifteen battalions in France were disbanded and thirty-eight were amalgamated to form nineteen units. The civilians who made this important decision at such a moment cannot have realized the temporary disorganization that it would entail and the confusion which a change

in the number of tactical units to be handled by the improvised divisional and brigade staffs would occasion. Their decision, in any case, sadly curtailed the small amount of time available before the spring for rest, training and improvement of the defences. The second palliative, proposed by the Supreme War Council, the formation of a General Reserve, does not require discussion, for the Council did not provide one ; it only proposed to withdraw divisions from the already too small existing reserves of the Allied Armies. It was not until the Americans began to take over some of the line that General Foch could form such a General Reserve.

Sir Douglas Haig, not having enough troops to man the 130 miles of front in sufficient strength everywhere, decided on a distribution which should be strongest on his left, which covered the Channel ports, had only fifty miles between it and the sea, and thus offered no room for manœuvre. The right,[1] where stood the Fifth Army, was deliberately made the weakest, because that Army had plenty of room to fall back and should profit from the nearness of the French reserves, an arrangement having been come to between Sir Douglas Haig and General Pétain for mutual assistance (see Sketch 8 in the " Official History, 1918," Volume I). Thus, with twelve divisions (one in reserve) and three cavalry divisions, General Gough had 72,000 yards of front ; the Third Army, on his left, had fourteen divisions (four in reserve) to hold 52,000 yards of front. Sir Hubert Gough has in his book, " The Fifth Army " (p. 238), recorded as his opinion :—

" Haig was therefore absolutely sound in his judgment to keep his reserves in the North and leave the Fifth Army to do the best it could with its few divisions to hold up and perhaps exhaust the German forces. I understood this conception perfectly, and in my discussions with Haig it was clearly understood by both of us that the role I was to play was to retire gradually, and to delay and exhaust the enemy, without exposing my Army to annihilation."

Further, he allows that Sir Douglas Haig allotted him enough divisions for his task, but " ran it a bit fine," certainly a handsome tribute to his Commander-in-Chief. There is therefore no cause to say that General Gough was " completely let down."

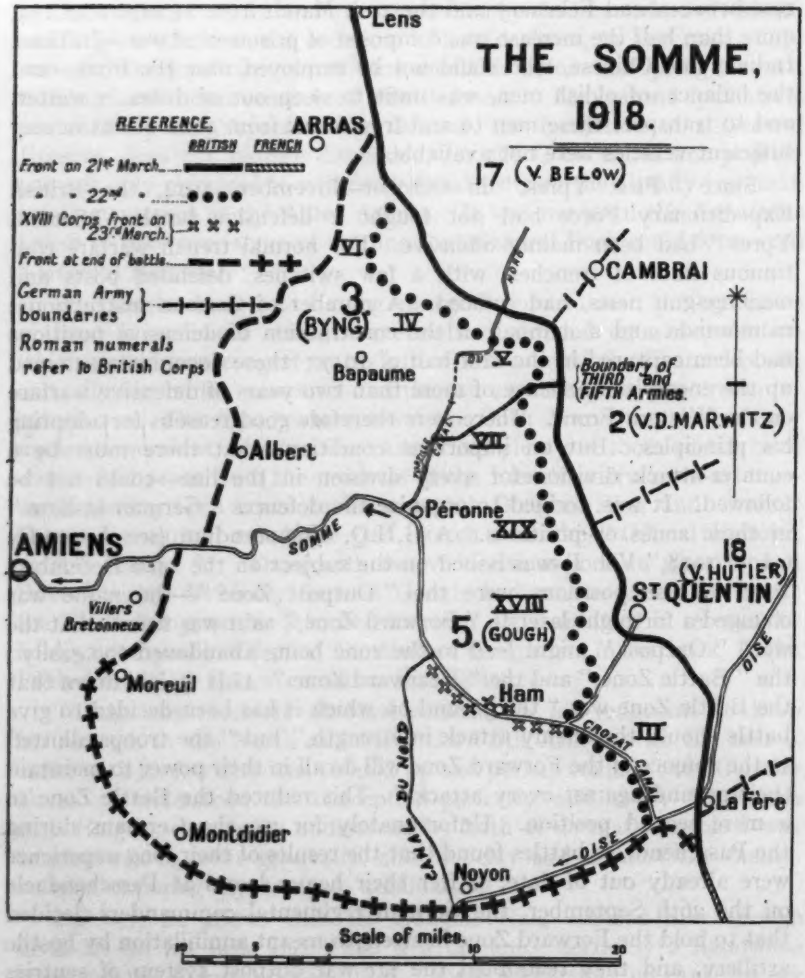
On the part of the Third Army front which had undergone a change in consequence of the Battle of Cambrai there was much work to do, but two-thirds of the Fifth Army sector required an immense amount of labour and material to put it in a reasonable state of defence. The working parties had mainly to be provided by the troops themselves ; for, although the effective strength of labour units with the Fifth Army

[1] See sketch map on p. 22.

rose between 2nd February and the 16th March from 24,217 to 48,154, more than half the increase was composed of prisoners of war—Italians, Indians and Chinese, who could not be employed near the front—and the balance, of oldish men, was unfit to sleep out of doors in winter, and to transport these men to and from work from good billets in rear sufficient vehicles were not available.

Since "First Ypres," in October–November, 1914, the British Expeditionary Force had not fought a defensive battle—"Second Ypres" had been mainly offensive. For normal trench warfare continuous lines of trenches, with a few switches, defended posts and machine-gun nests, had sufficed. A number of German instructional memoranda and a manual on the construction of defensive positions had been captured in the first half of 1917; these documents summed up the enemy's experience of more than two years of defensive warfare on the Western Front. There were therefore good reasons for adopting his principles. But an important condition—that there must be a counter-attack division for every division in the line—could not be followed. It was decided to organize the defences "German fashion" in three zones or positions. A G.H.Q. Memorandum (see Appendix 6 to "1918," Vol. I) was issued on the subject on the 14th December, 1917. These positions were the "Outpost Zone"—the name was changed a fortnight later to "Forward Zone," as it was feared that the word "Outpost" might lead to the zone being abandoned too easily; the "Battle Zone," and the "Rearward Zone." G.H.Q. laid down that the Battle Zone was "the ground on which it has been decided to give battle should the enemy attack in strength," but "the troops allotted to the defence of the Forward Zone will do all in their power to maintain their ground against every attack." This reduced the Battle Zone to a mere second position. Unfortunately for us, the Germans during the Passchendaele battles found that the results of their long experience were already out of date. After their heavy losses at Passchendaele on the 26th September, the German regimental commanders decided that to hold the Forward Zone in strength meant annihilation by hostile artillery, and they readopted the pre-war outpost system of sentries and piquets, making a strong line five to eight hundred yards in rear of the outposts the line of resistance. After the further disaster of the 4th October at Passchendaele, Ludendorff gave official approval to this outpost system, and he fixed the depth of its zone to from three to six hundred yards. This, unfortunately, was unknown to G.H.Q.[1] On

[1] The French did not practise the holding of the front zone lightly until after the disaster of the 27th May, 1918, on the Chemin des Dames. The British First and Second Armies, as the History shows, adopted it in April, the XI Corps even earlier.



the old parts of the front, the adoption of the new zone system made very little difference and the defence maps were coloured to suit the new nomenclature. The front position, with its support and reserve trenches, became the Forward Zone, the " Corps Line " became the front of the Battle Zone, and the " Army Line " the rear of it. Labour was concentrated on adding switches, belts of wire, posts and machine-gun nests. The Rearward Zone was still to make.

In the Fifth Army the case was somewhat different. For holding

the front position the French at this period—as the Germans had done until their Passchendaele experiences—favoured self-contained posts, " island positions " surrounded by wire—the so-called " blob " system in vogue when the B.E.F. entered the War. They scorned the British continuous lines—and relied on artillery fire and counter-attack for supporting the posts. The Fifth Army, with much to do and insufficient man-power, continued the French system (see Sketches 2 and 9 in " 1918," Volume I). G.H.Q. too had laid down that " the backbone of the defence in this (the Forward Zone) will be machine guns skilfully concealed in combination with wire entanglements."

The general result was that the defence of the two front zones of the Fifth Army was designed to be conducted by cross-fire from a series of small posts. To complete the system—besides the construction of the Rearward Zone, the front line only of which (the " Green Line ") was marked, by shallow digging—substantial reserves were necessary to recover lost ground, at any rate in the Battle, if not the Forward Zone; for any enemy offensive well supported by artillery was bound to gain some initial successes, as we ourselves had done in our offensive of 1916 and 1917. Reserves were lacking. G.H.Q. had only eight divisions at its disposal, and these were placed in pairs behind the four armies, for it was not known where the enemy's attack would fall. This uncertainty is a very important point. The Germans, with incredible industry and immense command of material and labour (including that of prisoners of war and inhabitants), had shown serious preparations for attack all along the front except in Alsace-Lorraine (see Sketch 6 in " 1918," Volume I, on which the eighteen attacks are shown under their code names). It was not until the 21st January, 1918, that Ludendorff made up his mind which attack he would carry out, and not until the 10th March that the order for it was issued. General Pétain was convinced that the whole force of the enemy would be launched against him in Champagne (Achilles–Rolond attacks), and the Germans took special measures to confirm him in that belief. The experts of the Versailles Council expected that the enemy would attack simultaneously at two places—in Champagne, as General Pétain thought, and against the Arras sector, using the " Mars–Valkyrie " schemes. Both G.Q.G. and Versailles were wrong. It was the Michael I, II and III offensive that was launched. At Sir Douglas Haig's Army Commanders' conference on the 2nd March, the Intelligence statement read :—

" There are strong indications that the enemy intends to attack on the Third and Fifth Army fronts with the object of cutting off the Cambrai salient." This was indeed his first stage. It is easy after the event to say that the presence on the Fifth Army front of General von

Hutier, the leader in the Riga break-through, and on the Third Army front of General Otto von Below, the leader in the Caporetto break-through, gave clear evidence as to where the attack would fall; the construction behind the Champagne front by French carpenters, impressed for the work in order to ensure that information should leak out, of accommodation for masses of additional German troops, was quite as good proof that the blow would be struck there, apart from a bogus operation order which was skilfully allowed to fall into French hands.

The German plan was not to separate the French and British Armies, but to destroy the British Army. Put in as few words as possible, the inner wings of the centre (Marwitz) and right (von Below) Armies were, first, to cut off the British in the Cambrai salient, then break through, wheel northwards and, with the assistance of armies further north, roll up and smash the British and Belgians. The business of the left (Hutier) Army was to gain the line of the Somme and Crozat canal and, with the left wing of the centre Army, act as flank guard, later crossing the water-line to attract the French reserves which would be earmarked for the support of the British; for, as General von Hutier's Chief of the Staff said, "the French would not run themselves off their legs to go to the assistance of their Allies." During the winter the German staffs and troops were thoroughly trained in the parts they had to play. The key word of the doctrine was "infiltration": that is to press on regardless of what is happening on the right and left: "a uniform advance in line must in no case be demanded. The fastest, not the slowest, must set the pace." The bombardment was to be short (five hours only) and fierce, commencing in the dark at 4.40 a.m. The Cambrai salient was gassed, not attacked, and the Third Army, by clinging to it despite G.H.Q. orders to hold it only as a false front and to make the defence on its base, played the enemy's game.

As regards numbers, according to the map marked by the German Historical Section, South and North of the Cambrai salient forty-three German divisions were massed against the thirteen and one-third divisions (including the two in G.H.Q. reserve and excluding the two-thirds of the 58th Division South of the Oise not attacked) and three cavalry divisions of the Fifth Army, and nineteen against the eight divisions (including the two in G.H.Q. reserve) forming the centre of the Third Army. The odds against were three to one in the case of the Fifth Army, and two and three-eights to one in the case of the part of the Third Army attacked. It has been demonstrated that to achieve a decisive victory under modern conditions when the foes are otherwise evenly matched, a two and a half to one superiority is just sufficient.

But this margin did not prove enough in the case of the Third or Fifth Armies.

The fog on the morning of the 21st March was much thicker and lasted longer on the Fifth Army front than on that of the Third (the detailed reports are given in the " Official History "). The Fifth Army was, in fact, " blind," and defence by cross-fire was in the circumstances useless ; but having, like the Third Army, prepared to defend the Forward Zone, it had a mass of troops exposed to the terrible bombardment. In the first assault the Forward Zone of the Fifth Army (right to left : III, XVIII, XIX and VII Corps) was entirely overrun, as the British had overrun the Germans at Arras on the 9th April and on the 31st July, 1917, at " Third Ypres." The centre and left of the III Corps, on the right, were also driven out of the Battle Zone, though the XVIII, XIX and VII Corps clung to it, maintaining a good part of the front line of this zone. North of the Cambrai salient, too, the Germans drove a wedge into the front of the IV and VI Corps right to the rear of the Battle Zone of the Third Army. A counter-attack to recover the Battle Zone was the natural course, but General Gough had no troops for such action. As the Rearward Zone did not exist, after communication with G.H.Q., he ordered at 9.45 p.m. the III Corps to fall back to a line behind the Crozat Canal (which on the right touched the rear of the Battle Zone and on the left was three miles behind it). The XVIII Corps was to bend its right back to keep touch. Thus a new line was taken up. In the Third Army the evacuation of the Cambrai salient was ordered. As only the centre of the Army had been attacked and it had six divisions in reserve, it could well look after itself. G.H.Q. ordered South the four reserve divisions from behind the First and Second Armies, and allotted one division of these, besides the two already nearby, to the Fifth Army. French G.Q.G. was inclined to believe that the attack on the British was only a feint ; but at 11.55 p.m., General Pétain ordered three divisons to be ready to move at any time after midday on the 22nd to our assistance.

On the 21st, no decisive disaster had happened, although many men and machine guns had been lost in the " islands " of the Forward Zone. But a nearly fatal step was taken on the 22nd. General Gough's orders for the 22nd were that, " in event of serious hostile attacks, Corps will fight rearguard actions back," first to the Green Line, and then to an " Emergency Line " (existing only on paper) about 3,000–5,000 yards behind the Green Line. In consequence of what seems to have been a misunderstanding (details are given in " 1918," Volume I, pp. 265–66), although the III Corps stood fast, the XVIII swung back to the line of the Somme, a retirement on the left of ten miles. There

was no reason to make such an extensive withdrawal, as the Germans, without the support which they had of their heavy artillery on the 21st, were unlikely to repeat the success of that day. On the 22nd the danger lay in the attempt of the Germans to cut off the Cambrai salient by thrusting through the IV and VI Corps of the Third Army. This manœuvre fortunately failed. The long retirement of the XVIII Corps entailed that of the XIX Corps and the right of the VII, so the evening of the 23rd found the III, XVIII and XIX Corps aligned along the Crozat Canal and the Somme up to its bend at Péronne, with the VII Corps behind the Tortille and the Canal du Nord, and in touch with the Third Army now almost clear of its dangerous salient.

As it turned out, this sudden retirement of the Fifth Army had an unexpected and fortunate effect. Ludendorff believed that von Hutier's army had achieved a decisive success, whilst the other armies had not done as well as had been expected. Like von Kluck in 1914 when the B.E.F. fell back rapidly, he changed his plan : von Hutier was to push on and " separate the French and British by a rapid advance on both sides of the Somme." As Crown Prince Rupprecht's Chief of the Staff put it :—" Thus there was a complete change of plan. Hitherto the main feature had been the attack of the Second and Seventeenth (centre and right) Armies against the British. To the Eighteenth (left) Army fell only the protection of the attack from the French. Now the French and British were to be separated and both attacked simultaneously. This meant shifting the whole attack a good way to the left." The weight of the German thrust, therefore, was transferred from the space between Arras and Albert, behind which the British were hemmed in by the coast, to the space between Amiens and Noyon, where there was considerable room, and which was nearer the French.

The further efforts of the Germans created only a great salient. For, although the Fifth Army was forced back from the line of the Somme, and westwards for nine days, pivoting with the Third Army on a point near Arras, the line was never broken through. The gap left between La Fère, where the right of the Fifth Army had stood on the 21st, north of the Oise, and Moreuil (forty miles to the West-North-West), to which this flank swung back, was filled step by step by the French. A final effort of the Germans on the 4th and 5th April at the apex of the salient in the hope of reaching Amiens was defeated. Thus a great triangular pocket had been created, and whereas the British Fifth and Third Armies had on the 21st March held its base AB, they now held AC (A being Arras, B La Fère, and C Moreuil), and the French held BC.

Certain incidents in the retreat require mention. In the arrange-

ments for mutual assistance made between Sir Douglas Haig and General Pétain, it had been agreed that " when a definite zone was taken over by the French, any British troops remaining in that zone were to pass under French command." Under this agreement the three divisions of the III Corps, and two cavalry divisions with them, which remained at the hinge of the Allied Armies, passed on the 24th March to the command of General Pellé (French V Corps), and did not return to the British sector in front of Amiens until the beginning of April. In the early morning of the 25th March, the VII Corps (less two divisions South of the Somme added to the XIX Corps) was transferred from the Fifth Army to the Third, so that the Somme became the boundary. Thus General Gough was shorn of two of his four corps. Further, also in the early hours of the 25th, the Somme was made the boundary between the French and British, and the Fifth Army (that is the XVIII and XIX Corps) for operational purposes ceased to be under G.H.Q. and came under the command of General Fayolle, of the Group of Armies of the Reserve. A bad beginning in co-operation came to pass next day, when a swing back of the right division of the Third Army, next the Somme, owing to a misunderstanding, and a retirement of the French on the other flank, nearly brought disaster to the XVIII and XIX Corps and occasioned an otherwise unnecessary further retirement of the Fifth Army. Yet the divisions which had originally formed it all remained in existence, most of them still in the front line ; some, later transferred to the Second Army for rest, were to fight again in the Lys battle in April, whilst the III Corps was to fight at Villers Bretonneux at the end of that month. Never in history has an Army come under such unmerited criticism—the deeds of the Fifth Army should have gone down to posterity as well sung as those of the Old Contemptibles of 1914. Almost overpowered in thick fog by a bombardment of unparalleled fury, its weak defences, recently taken over, overrun by greatly superior numbers, it retired fighting, and by its steadfastness gained time for the French to come up.

THE SUPERSESSION OF GENERAL SIR HUBERT GOUGH

No official papers are to be found with regard to the supersession of General Sir Hubert Gough. As in the case of the removal of Admiral Lord Jellicoe from the post of First Sea Lord, action was taken by means of verbal directions and personal letters (see Admiral Sir R. Bacon's "Life of John Rushworth, Lord Jellicoe," pp. 378–88, and Ian Colvin's "Lord Carson," Vol. III, pp. 287–89 and 332–34). The evidence of what occurred is fragmentary, but conclusive that Sir Douglas Haig was very strongly opposed to General Gough's dismissal. Others may be able to fill some of the gaps. In the autumn of 1917, towards the close of Passchendaele, it was suggested to Sir Douglas Haig from several quarters that he should get rid of General Gough; but he was adamant in retaining him. Members of the Cabinet seem to have discussed the matter informally, so that Lord Carson was moved to write some impromptu verses headed "P.M. loquitur," the last lines of which ran (see Colvin's "Lord Carson," III, p. 286):—

> "Let Gough be sacked and Haig be damned.
> On justice let the doors be slammed.
> Let gossip rule instead of law;
> I'll run the Services by jaw."

At the end of November, I personally mentioned the rumours on the subject to the Commander-in-Chief, and so, as he told me, had the Military Secretary, G.H.Q. (Major-General Sir W. Peyton). We both were snubbed for our pains; although afterwards the Commander-in-Chief was kindlier than ever in his manner towards me. The agitation against Gough then appeared to die down. But it was revived when, on the 16th February, Sir William Robertson ceased to be Chief of the Imperial General Staff. Sir Henry Wilson took his place and, on Sir Douglas Haig's advice, Sir Henry Rawlinson was appointed to Wilson's post as British Military Representative with the Supreme War Council, Versailles.

It was obvious that the new C.I.G.S. did not want a strong man at Versailles. He preferred "a comparatively junior officer." In the sequel he got one to his taste. "To him, General Wilson, as C.I.G.S., gave orders over a direct telephone wire" (see "1918," Vol. II, p. 88, fn.). But before this could be done Sir Henry Rawlinson had to be provided for. The agitation for the removal of General Gough was renewed. On the 3rd March, Sir Douglas Haig, meeting me casually, recalled my earlier warning and told me that the Government were again at him to sack Gough. He had been in London and seen the Prime Minister

on the 17th February. He felt sure that Sir Henry Wilson was at the bottom of it. Two days later, on the 5th March, Lord Derby, the Secretary of State for War, wrote to the Commander-in-Chief: "It looks now as if an attack might come within a very short time on your front, and on that part of the front of which Gough is in command. It has been borne in on me from all sides, civil and military, that he does not have the confidence of the troops he commands, and that is a very serious feeling to exist with regard to a commander at such a critical time as the present. I believe the Prime Minister has also spoken to you on the subject, as he has heard reports from various sources with regard to Gough. He has also spoken to me." With an attack pending, the Commander-in-Chief declined to remove General Gough to another post.

On the 25th March, the day before the Doullens Conference, at which General Foch was placed in control, about midday, Sir Henry Wilson was seen walking up and down near the G.H.Q. offices in Montreuil, muttering so all might hear, "Gough must go. Gough must go." And according to his diary he told Sir Douglas Haig so next day just before the Doullens Conference.

On the 26th March, about 5 p.m. (Haig's Diary), after the Conference, Lord Milner and Sir Henry Wilson tackled the Commander-in-Chief again on the subject of Gough's removal, telling him that public opinion at home was adverse to Gough, and that Foch considered that he had done very badly. General Foch, as it is now known from Sir Hubert Gough's book ("The Fifth Army," pp. 305–7), at 4 p.m. (the time is given in the "French Official History," Tome VI, Vol. I, p. 324), had visited Fifth Army Headquarters at Dury, a straight run of twenty-two miles from Doullens, and, although he had been warned by telephone to be there to meet Foch, General Gough was insulted by him for not being forward with his troops. Sir Douglas Haig resisted Milner's and Wilson's endeavour to remove Gough, saying: "No matter what Foch might have said, I considered that he (Gough) had dealt with a most difficult situation very well. He had never lost his head, was always cheery and fought hard" (Haig's Diary, which contains no mention of Gough's relief next day). Wilson then said that Gough must be relieved. No order can be found, but next day Sir Henry Wilson told the Deputy Chief of the Imperial General Staff that orders were being issued to Sir Douglas Haig for the removal of Gough, giving the old reason that his men had "lost confidence in him." Between 5 and 6 p.m. on the 27th March, the Military Secretary G.H.Q. personally informed General Gough that it had been decided that he and his staff required rest—the same reason is given in Sir Douglas Haig's printed despatch, but is, of course, camouflage—and that General Rawlinson would arrive next

day to take over. Gough was later directed to go to Crecy to form the headquarters of a Reserve Army. General Sir William Birdwood subsequently re-formed Fifth Army Headquarters there.

No record can be found of anything happening during the following week. But obviously the powers at home were not satisfied with General Gough being given another command. On the 3rd April, before a conference at Beauvais, Sir Douglas Haig took the opportunity to champion the cause of General Gough with the Prime Minister. Mr. Lloyd George replied that :—

" General Gough had neither held nor destroyed the Somme bridges [he had done both, except as regards the railway bridges, for which the French were responsible] and that he must not be employed again."

He then told Sir Henry Wilson that he had informed Sir Douglas Haig that Gough must go. Next day Lord Derby telegraphed to Sir Douglas Haig : " It is quite clear to me that his troops have lost confidence in Gough, and before seeing you Prime Minister had consulted with me as to his retention in command of an Army, and, with my full concurrence, notified to you yesterday (*sic*) that, pending report in detail with regard to recent operations, it was necessary that he should vacate his command of the Fifth Army and return home." On the same day Lord Derby wrote to Sir Douglas Haig : " Army commanders, subject, of course, to the advice of the Commander-in-Chief, are appointed by the War Cabinet, and they have a perfect right to remove any man in whom they have lost confidence. I will not recall my previous correspondence with you, but you know my feelings on the subject of this particular General. I entirely agree *with the Prime Minister's decision*, and please believe me there is no doubt whatever that there is a want of confidence in this country with regard to Gough, and an intense feeling against him, the bitterness of which I am sure you cannot gauge, which, however his actions during the battle prove to be justifiable, makes him no longer an asset to the Army. I have heard, of course, nothing from those in France who are still under his orders, but among men returned to this country in the various hospitals there is a consensus of opinion which neither this Government nor any other Government can afford to ignore. I am sorry for him, because he is a gallant officer, but there is no alternative." Sir Douglas Haig in acknowledging this letter, wrote : " I have more than once said to you and to others of the Government, the moment they feel that they would prefer someone else to command in France, I am prepared to place my resignation in your hands. The needs of the State and the wishes of the Government must take first place, and the interests of individuals must be ignored. Do not consider me." No notice was

taken of Sir Douglas Haig's offer to resign. He had to obey the order given to him. On the following day he invited General Gough to luncheon, and informed him of " the orders received from the Secretary of State for War for him to go home. He quite understands that I have supported him to the utmost of my power."

An inquiry was refused to General Gough, but he was informed in an official letter from the War Office, signed by the Military Secretary, but actually drafted by the hand of Lord Milner (who had succeeded Lord Derby as Secretary of State) : " In harmony with the opinion of his advisers, the Secretary of State does not feel that you are in any way disqualified for a command appropriate to your rank and service, and your name will, if you so desire it, be considered as opportunities occur. The gallant fight of the Fifth Army against such heavy odds and in circumstances of extraordinary difficulty, will always rank as one of the most noteworthy episodes in the Great War."

In Mr. Lloyd George's " Memoirs," p. 3387, will be found the following : " When Gough had been beaten owing to conditions for which Haig alone was responsible, Haig, instead of accepting that responsibility as ' an officer and a gentleman,' removed Gough from the command and left the Government to infer that the *dégommé* General was alone to blame." As Mr. Colvin has said, " characteristic " !

BRITISH MERCHANT SHIPPING TO-DAY

By Sir Archibald Hurd.

On Wednesday, 11th November, 1936.

Admiral of the Fleet Sir A. Ernle M. Chatfield, G.C.B., K.C.M.G., C.V.O., D.C.L., in the Chair.

The Chairman: Sir Archibald Hurd is probably well known to all of you; he is certainly well known to me, because very nearly forty years ago I used to discuss with him in the ward-room of our men-of-war at what were called the annual naval manœuvres, the eternal problems of the sea.

He is a master of the subject on which he is going to lecture this afternoon: a subject which is of the very greatest interest and, in fact, an all-absorbing subject. His writings on it have enriched the libraries of seamen, and what he will say will be said with authority, after great experience.

LECTURE.

IN a period of a little over twenty years—that is since 1914, British shipping has declined by 9 per cent.; while, under the pressure of adversity, the personnel, excluding fishermen and Lascars, has decreased by at least 30 per cent. To that extent our economic power in time of peace and our defensive power in time of war have been weakened.[1] On the other hand, the United States possess considerably more than four times as much sea-going tonnage as they had in 1914. Japan, Greece, Italy, and Norway each have more than twice as much shipping as they had. In the case of Sweden, France, and Holland, the expansion has ranged from about one-half to three-quarters, while Germany—this country's most serious rival in pre-War years—though she surrendered practically all her ocean-going tonnage under the Treaty of Versailles, has made great progress towards the restoration of her merchant navy to its former strength.

The British Empire, occupies nearly one-sixth of the land surface of the globe, and is widely distributed over the world's seas. Shipping is its heel of Achilles, and ships are to the Empire what railways and

[1] See Tables I and II, pp. 46 and 47

roads are to most other countries. That condition is a permanent one in spite of the evolution of air power, because neither airships nor aeroplanes can carry great weights such as food supplies and raw materials, nor can our coal exports or our manufactures be carried by air: every day cargoes weighing 60,000 tons have to be unloaded in our docks in order that we may live and work. The countries which pay their allegiance to King Edward VIII are all dependent on sea power: Australia and New Zealand are completely surrounded by water; South Africa has practically no economic outlet except through her ports; Canada, under the restrictions of a tariff, can, it is true, trade with her neighbour the United States, but her main reliance must be placed on ships passing in and out of her Atlantic and Pacific ports; India would be imprisoned by the Himalayas—cramped, cabined and confined, if she had not ships at her disposal. And so it is with all the British Empire; its inhabitants—about 500 million people—could not exist in peace at anything approaching their present levels of comfort, which are still steadily rising, if it were not for British shipping; and in time of war they would be forced to surrender to an enemy who had secured command of the sea.

The change in the balance of commercial sea power has not been due to any decline in the high character of British ship design or construction, in the competency of the management of British shipping, or in the efficiency of British merchant officers and men. The explanation is to be found in one cause alone—the lessons deduced by foreign governments from the Great War. They determined to build and operate at sea larger merchant fleets than they had hitherto been able to support, and since British shipping was so efficient as to defy fair and square competition they resorted to subsidies. We have all paid tribute to the courage of the Allied troops and to the fine heroism of the airmen, but, in the last analysis, the War was won by sea power—by ships of war and by ships of commerce. If the Allies had lost the freedom to use the sea, no military power and no air power, however overwhelming, could have saved them from defeat. From the first day of the War onwards for many anxious months the essential link in communications was the English Channel, and as new theatres of war came into the picture under the compulsion of events or policy, the Allies' dependence on sea power, and in the main on British sea power, increased. The struggle became the greatest amphibious operation, or rather series of amphibious operations, of which history holds the record. And it was not a matter of ships of war only, but of ships of commerce. As the war on the various fronts developed, the burden of responsibility for success or defeat rested more and more heavily on merchant shipping because the continuance of naval, military and aerial operations every-

where depended, first and last, on sea-borne supplies of men, munitions and food, while in every Allied country the population had, in varying degree, to be sustained from the sea.

The character of the burden cast on Allied and neutral merchant shipping will be appreciated, if it be recalled that at the end of October, 1918, only 39,000,000 tons deadweight of shipping of 500 tons gross and upwards were available (exclusive of oil tankers).[1] How was this shipping being used?[2] Nearly 16,000,000 tons (15,713,000 tons) were engaged in the import services of the four main Allies. Just over 9,500,000 tons were being used in various coastal or Colonial services. About 9,000,000 tons were needed for naval and military duties. Approximately 5,000,000 tons were either under repair or unavailable for service through other causes. It will thus be seen that shipping of 23,500,000 tons was withdrawn from its ordinary oceanic work. The broad fact to be emphasized is that, though 90 per cent. of the shipping of the world was at the disposal of the Allies, it proved barely sufficient to avert defeat. In the crisis of 1917 one out of every four ships which sailed did *not* return. During that period of the War, the troops in the various theatres as well as the civil populations were brought face to face with the possibility of surrendering under the threat of starvation—not owing to the failure of naval power or air power or owing to the checkmate of military power, but owing to the need for more merchant ships. That was time and again the urgent problem—more urgent than anything else.

These experiences of the years of ordeal proved that in an amphibious war merchant shipping is an essential factor. Every record of the Great War has borne testimony to the fact. "The man in the street" in our cities, towns, and villages does not read official histories, nor do the members of the Governments he elects from time to time; so in this island country, which can exist only so long as it has plenty of ships, no adequate appreciation has been formed of the extent to which British merchant shipping had saved the Allied cause from defeat, and no measures have been taken to assist the industry to make good the losses of the War or to protect it from unfair competition. In the past, shipping—the most economically hazardous of all industries—has been able to relay its foundations in periods of war, famine, discovery or migration, by investing its profits in new and improved ships in readiness for the inevitable reaction when tonnage, being in too ample supply, every economy which can be secured by adopting new ship designs is essential. Soon after the Great War opened, the Government for the

[1] Of this total 19,159,000 tons deadweight were British.
[2] "Allied Shipping Control," by Sir Arthur J. Salter.

first time in our history took over control of British shipping, withdrew most of the ships from the distant trade routes so that they might be available in the war areas, and fixed the rates of hire—Blue Book rates as they were called. Whatever balance remained on the right side of the voyage accounts in these circumstances was subjected to the high taxation which was then necessary, and was brought under review for Excess Profits Duty. The result was twofold: on the one hand, shipping under most other flags reaped the full financial benefits of the scarcity of tonnage and invaded many trade routes which had been developed by British owners; on the other hand, there were losses under the British flag sustained by gun, mine and torpedo amounting to 7,000,000 tons. It has been estimated that the insurance money which was paid on this 7,000,000 tons fell short of the cost of replacement by £137,000,000.

When the War came to an end, British owners were left to solve their own problems without sympathy and without aid. Peace dawned for others, but for them there opened an economic war on their special interests more intense and more widespread than had ever been known in the past industrial history of this country. The main lesson of the War—the vital importance of sea power to an island country, the pivot of a maritime Empire, was completely ignored. But in foreign countries the importance of merchant shipping was fully realized even before the struggle was over, and governments all over the world began to apply the outstanding lesson of the Great War to their own conditions. The United States of America, having decided that they must have "a navy second to none," determined, as a matter of national policy, that that fleet should be supported by a great merchant navy, for which employment must be found practically regardless of cost. Japan, France, Italy, Germany, Holland, and indeed every maritime State, except the three Scandinavian States of Norway, Sweden and Denmark, caught the infection. In some cases "cheap money" was provided by the government to encourage the construction of merchant tonnage; in other cases operating subsidies were granted; and in some instances both means of assistance were adopted, sometimes in association with measures giving extended application to restrictive coasting laws, as, for instance, when Congress at Washington decided that voyages between any port of the United States and any port in Honolulu—a distance of over 2,200 miles, should be so regarded—and that only American ships should carry passengers and cargoes between such ports.

It is impossible to state in terms of money the amount of the aid, direct and indirect, which has been given by foreign governments to assist their national shipping because much of the expenditure has been

concealed and, for the rest, producers and consumers have paid increased freights for the movement of passengers and goods from one coastal port to another in ships protected from foreign competition.[1] A few years ago these subsidies were put down at £30,000,000 a year, and that figure was widely accepted as representing the extent to which the dice were loaded against British shipping. But if allowance be made for all the various forms of aid, the amount is much higher than that. If one were to hazard an estimate, it would probably not be an exaggeration to state that from first to last a sum of about £2,000,000,000 has been spent in shipbuilding and shipping subsidies, of which the American taxpayers have provided about one-half. There is no sign that subsidies are about to be abandoned. On the contrary, they tend to increase. Foreign taxpayers have not risen in revolt as it was prophesied that they would do. The explanation is that they have been told that merchant ships will be essential to the State in time of war—first, in order that their trade may continue in the event of the great maritime countries, and especially the United Kingdom, being engaged in hostilities, and, secondly, in order that their men-of-war may be able to operate. Both these arguments have, in particular, been urged upon the people of the United States with the result that, in spite of the vast sums already spent on shipbuilding and ship operating, a new Subsidy Bill was passed by Congress as recently as July last.

Before the Great War, shipping was an international industry—the only really international industry. The most efficiently managed and operated ships got the passengers and the cargoes on their merits, with the result that this country did the greater part of the carriage of ocean-borne commerce. The Booth Committee reported in 1918 that " before the War, over one-half of the world's trade was carried in British ships, including nine-tenths of the inter-Imperial trade, over three-fifths of the trade between the Empire and foreign countries, and nearly one-third of the trade between foreign countries and foreign countries "—that is trade in which British producers, consumers or merchants had no concern. What is the position to-day ? Foreign ships are not only doing more of the trade between the Empire and foreign countries than they did, and much more of the trade between foreign countries and foreign countries, but they are also cutting into the inter-Imperial trades. Shipping is no longer an international industry : in each of the principal maritime countries it has been taken under the wing of the government, which endeavours to secure for it the maximum employment—necessarily at the expense of British shipping. In some instances cargoes sold by this country are reserved for the tonnage of the purchasers—

[1] British coastal shipping is open to all nations on terms which are in some respects more favourable to foreign than to British shipowners.

as in the case of Welsh coal for Italy and France, and in others even goods bought by us are reserved for the tonnage of the sellers—as in the case of Russian timber and, to a great extent, Danish dairy produce. American, Japanese, Italian, German, and French shipping is now under varying forms of government control, and bureaucracy in such circumstances pays allegiance to few of the economic laws which were honoured in the early years of this century.

The old order has passed, and no mean part of the shipping now afloat under foreign flags has been, to all intents and purposes, nationalized. The owners are still the nominal owners and are permitted to manage the ships, but subject to the ultimate control of the appropriate department of the Government, as, in particular, in the United States, Germany, France, Italy, and Japan. In the case of three German liners which were recently built, the ships themselves were constructed at the expense of the Reich and have been chartered to the company which runs them. It is possible that this example will, in the not far distant future, be followed by other countries such as Italy and the United States. In all these and other countries a new conception of shipping has been formed. It is no longer looked upon as a great economic instrument for the efficient movement of goods over the seas of the world without let or hindrance, but as a second line of naval defence in time of war ; and so the ships are employed under uneconomic conditions in peace time, promoting, as it is claimed, the national export trade. Thus, on the one hand, it is held that ships must be employed whatever the cost to the taxpayers. On the other hand, it is the aim of each country to sell as much as possible and to buy as little as possible, thus limiting the cargoes to be carried. All Adam Smith's theories of the balance of trade are scouted. In the result, as the volume of shipping on the world's seas has increased, at the charge of foreign taxpayers, so under the influence of tariffs, quotas and other forms of economic madness, the volume of goods to be carried has decreased.

It is under these conditions that for a decade and more shipbuilding and ship operating have been carried on all over the world—and British shipping has inevitably suffered. At the opening of this century, upwards of half the steam and motor tonnage (50.2 per cent.) in the world was British ; by 1914, owing in large measure to the progress of German shipping, the proportion had fallen to 41.6, and now it has declined to 26.8 per cent. In the House of Lords, recently, the Government spokesman claimed that in an emergency we could rely on neutral tonnage, as in the later phases of the Great War. That is a dangerous misconception. Neutral ships were then available mainly because they needed British coal and the facilities provided at British coaling

stations overseas. That magnet has, to a great extent, been demagnetized. Whereas in 1914 the proportion of coal-burning ships to other ships under *all* flags was 88.84 per cent. (not far short of 9 out of every 10), now the proportion is only 49.10, and it is still decreasing.[1] We can no longer comfort ourselves with the reflection that we can secure control of any considerable volume of neutral shipping to supplement our own resources. And it may, in that connection, be remarked that, though far more shipping was under the British flag in 1914 than there is to-day, it is doubtful if we could have won the War if it had not been for the neutral tonnage which we were able to press into our service.

How does the decline of British shipping affect "the man in the street"? Under normal peace conditions, shipping has an importance to this country which is little appreciated. It provides directly a larger amount of employment than any other industry except, possibly, agriculture. Including Lascars, it has a reservoir of nearly 200,000 seamen—officers and men, on which drafts are made for crews.[2] Then there are large technical staffs in every city and town of any importance in this country, as well as overseas, who are concerned with the management of the fleets and the conduct of the day to day business in connection with the movement of passengers and goods. In addition, about 12,000 men are attached to the ports round our own coasts for loading and unloading goods and dealing with the embarkation and disembarkation of passengers. Then the ships have to be built, provided with engines and equipped, furnished and stored. It is impossible to estimate the extent to which shipping provides work in all of these varied directions; all that can be attempted is an approximation to the numbers. Apart from a certain amount of casual labour, the workers in the shipyards number 157,000. Then there is marine engineering; no fewer than 45,000 men are registered under this heading.

These figures take no account of the men engaged in mining the coal and ores for the making of the steel, and others who are engaged in fabricating other metals used in shipbuilding and engineering, in fashioning all the various kinds of woods which are required, in making navigational instruments, pottery, carpets, cutlery and so on. When the "Queen Mary" was built nearly two hundred firms, distributed over the length and breadth of the country, were called upon to make their appropriate contributions to the construction of this liner. There was hardly any trade which did not benefit from this contract. What was true of this great Atlantic liner is true, in varying degree, of every

[1] See Table I, p. 46.

[2] The number of white seamen decreased from 165,309 in 1911 to 120,086 in 1931.

ship which is built, whether passenger liner, cargo liner, tramp, collier or oil tanker. Every vessel afloat is a home for the crew as well as a vehicle for the carriage of passengers or goods, and has to be provided with the amenities of comfort as well as the instruments of commerce. Thus it comes about that the building, engineering, equipping, operating and repairing of ships is no slight source of employment, making heavy demands on the labour market all over the country and especially on skilled craftsmen.

But from an economic point of view, shipping is also of importance as an export trade. Under normal conditions, it is this country's *greatest export trade*, exceeding in value cotton, being more than twice as much as woollen textiles, and nearly twice as much as either iron and steel or machinery. The gross earnings—not, of course, the profits—of British shipping engaged in the foreign trade of the world, after the expenditure in foreign ports had been deducted, were estimated by the Board of Trade to have amounted to the following sums in recent years :—

	£		£
1920	340,000,000	1929	130,000,000
1922	110,000,000	1930	105,000,000
1923	133,000,000	1931	73,000,000
1924	140,000,000	1932	65,000,000
1925	124,000,000	1933	59,000,000
1926	120,000,000	1934	64,000,000
1927	140,000,000	1935	65,000,000
1928	130,000,000		

Such are " the invisible exports " which help to balance our national trading account ; in other words, in this way British shipping helps to pay for the food, raw materials and other things which we must have in order to live. It will be seen that the contribution last year was less than one-fifth of what it was in 1920, and to that extent, allowing for the change in the value of the £ sterling, this country's economic strength has been weakened.

Another branch of this country's trade has also suffered—the export of new ships. British builders have been able to build far fewer ships than they did for British owners. The greater the output of tonnage the cheaper, as a general principle, is the price at which tenders can be made. Apart from the falling off of the British demand for new tonnage, other factors have warred against British shipbuilders and marine engineers in competing successfully for foreign orders, chief of which is the movement of foreign countries towards national self-sufficiency. Under artificial conditions their shipyard capacity has been enormously increased. In these circumstances, British ship exports have greatly

declined. Their value was nearly £8,500,000 in 1913, rose to £10,750,000 in 1928, to £11,700,000 in the following year and reached, in 1930, the high figure of £19,500,000, from which they fell to £3,770,000 in 1935, representing a great loss of employment, especially for skilled craftsmen, not only in the shipyards and engine shops, but in all the ancillary industries concerned with ship equipment. The latest shipbuilding returns of Lloyd's Register show that, owing to frozen credits, deranged exchanges and political influences, while British yards have ships of only 47,000 tons under construction for registration overseas, Germany has 192,930 tons, Sweden—87,380 tons, Denmark—62,090 tons, Danzig—27,910 tons, Holland—19,250 tons, Japan—5,571 tons. In all, other countries are constructing ships of 401,996 tons for registration under flags other than their own. Under pre-War conditions most of those ships would have been built in the British Isles.

It is not suggested that this record of the manner in which British shipping supports the country's prosperity is complete, but it is suggested that even from the economic point of view, this industry and the other maritime industries which it feeds have an importance which legislators, in their search for votes, a legitimate search since ours is a democracy, have never apprehended or shipping would not have been regarded for so long as the Cinderella of all the industries.

The nation as a whole has suffered, and is suffering, heavily under peace conditions from the decline of British shipping, but the outlook under war conditions is even more grave. There can be no British Empire without ships—ships of commerce as well as ships of war. The Royal Navy and the Merchant Navy are complementary; the one is dependent on the other; weakness in the one means weakness in the other. For a thousand years of our history that dual dependency on sea power has been proved by events. Down to the time of Elizabeth, the merchant ship, since armaments were rudimentary and of light weight, was also on occasion a man-of-war; she had to defend herself. Then, owing mainly to the progress of gunnery, the distinctive ship of war and the distinctive ship of commerce were evolved. During the Great War, the mine and submarine brought about a new situation; the merchant ship was provided with defensive armament. The two types, however, remain separate and distinct. On the one hand, though the ship of commerce looks to the Royal Navy for its main defence in convoy or otherwise, she has now to have her own defensive armament for use in an emergency. On the other hand, the Royal Navy must rely on the ship of commerce as an auxiliary, and without that auxiliary it cannot efficiently carry out its functions.[1] There never was a period in

[1] The British Army could not operate outside the British Isles unless merchant ships were available to transport it.

modern times when the two navies were so inter-dependent as they are to-day, owing to the dependence of all the fighting Services on oil fuel from overseas. Consequently the restoration of the Merchant Navy is quite as vital as the restoration of the Royal Navy.

It has come as a shock to those who have not followed the gradual weakening of British sea power that the Merchant Navy has declined by 3,000,000 tons gross in the past five years. But it is even more disturbing that the ships now in existence are, on the average, much larger than they were, and the *number* available, therefore, is smaller than the decline in tonnage would suggest, and *in war it is numbers that count*. An enemy's gun, mine or torpedo does not sink so many tons of shipping, net, gross or deadweight, but so many units of carrying power: the fewer the units, the greater the danger even though each unit is of greater tonnage. In the year of the outbreak of the Great War, the number of British merchant vessels was 9,240, and even in 1926 it was 9,034. In later years there has been a steady decline until now there are only 7,246—2,000 less than there were less than twenty years ago. What makes the matter so serious is that there are far fewer vessels available of the tramp type—ships going anywhere to do anything according to the fluctuations in the economic situation in various parts of the world, "the loose tonnage" which proved of such high value during the submarine campaign.

If we had the will and the money, could those 2,000 missing ships or any considerable proportion of them be built in a reasonable time? The organization exists; the shipbuilders have rationalized their industry, reducing its capacity by one-third at a cost of £2,000,000 provided by the industry itself by means of a levy, and half the remaining slips are empty; but deliveries of steel are increasingly in arrears, and for that shortage the industry is not in any way responsible; it is due to the policy dictated by successive governments and endorsed by Parliament—the policy embodied in the successive naval gestures which were made at the meeting of the Washington Conference and at subsequent Conferences. In the years preceding the outbreak of the Great War one-quarter of the output of the private shipyards was naval. During that struggle the establishments, the capacity of which had to be greatly increased, worked at high pressure, and when the Armistice was concluded the workers of all classes numbered no fewer than 358,000. As we can all recall, the Peace Treaty was hailed as heralding the millennium. We should, it was claimed, require only a very small fleet in future years. So, at a time when there was little mercantile building, the Admiralty was told to order only a minimum number of men-of-war. Shipbuilding thus came almost to a standstill. Though many skilled men found work in other trades, it had a larger proportion of unem-

ployed than any other industry—in some districts seven or eight out of every ten men were in enforced idleness. In those circumstances, lads on leaving school looked in every direction for work except the shipyards. The apprenticeship system practically died. Leaders in the industry realized what was happening, and appealed to the Government for sufficient orders to enable them to keep their yards working with small staffs, but a deaf ear was turned to every appeal. The result of this mistaken policy is that to-day the yards, with only about one half of their facilities in use, have too few skilled workers at a time when the Admiralty is placing large orders and shipowners are urgently requiring new ships to replace some at least of those which have become obsolete. The pressure of work is increasing, and if orders were given for the 2,000 missing ships, it would be a long time before they could be completed.

If we had the ships we need, would there be sufficient officers and men to take them to sea? In Table II.[1] figures are given of the decrease in *personnel* which occurred between the Census of 1911 and that of 1931. The number of white seamen decreased by upwards of 45,000, equivalent to 27.35 per cent. There is reason to fear that in the last five years of acute depression a considerable number of men who were serving in 1931 have drifted into other occupations, while the gaps made by death have not all, by any means, been filled. The recent modest improvement in freights and the consequent re-commissioning of laid-up vessels for service has already exposed a shortage of engineer officers as well as of certain classes of seamen; the shortage on the lower deck will continue to increase owing to so few apprentices coming forward. What would happen in time of war when the Royal Navy might have to make drafts on the Merchant Navy, if not to complete its own complements at any rate to provide officers and men for the auxiliary services, must be a matter of speculation and not pleasant speculation.[2] If it be assumed that the average crew of a merchant ship is thirty men and that the Admiralty found itself short of, say, 15,000 men, five hundred merchant ships would have to be immobilized.[3]

---

[1] See p. 47.

[2] An interesting discussion on this subject will be found on pp. 48–52 of this JOURNAL. See also Correspondence, p. 194.—EDITOR.

[3] "Beginning in August, 1914, with a mere handful of men and ships, the 'New Navy,' improvised after the War had begun, had increased at the signing of the Armistice to over 39,000 ranks and ratings of skippers and fishermen. Large numbers of officers and ratings of the R.N.R. and R.N.V.R. had also been pressed into the service. The number of yachts, patrol gunboats, trawlers, whalers, M.L.'s, drifters, motor drifters, motor boats, mine-sweepers, had reached the enormous total of 3,685 vessels by the end of the War."—*The Merchant Navy*, Vol. III.

What has happened is no mystery. For seven years shipping has not been paying, and many lads on leaving school, who would have decided under favourable conditions to go to sea, have chosen other careers offering higher pay and less discomfort and, in the case of employment under central or local government, having holidays with pay and pensions on retirement. Probably the love of adventure is as strong in our boys as ever it was, but it can be gratified only at a sacrifice of material interests. So, successive Governments having starved the Navy of men, any shortage in the complements of the Royal Navy and the crews for the auxiliary services could apparently be made good only by laying up merchant ships at a time when they would all be urgently needed for the carriage of supplies of all descriptions—food, raw materials and oil fuel. As in the Great War, the tanker services would, no doubt, have to be supplemented by supplies carried in the double bottoms of merchant ships.

The efficiency of the British Merchant Navy, fortunately, is high and is still rising. It includes upwards of 6,000,000 tons less than ten years of age—one-third of the whole fleet, and upwards of 1,000,000 tons are building. It is apparent that British shipowners, in spite of the dice being loaded against them, have not lost their courage; they are looking to the future with confidence, convinced that, if the worst comes to the worst, Ministers will have to come to their rescue, since command of the sea by the British Merchant Navy is as vital as command of the sea by the Royal Navy. What, then, is the opinion of the shipping industry as to the policy which should be adopted? The Chamber of Shipping and the Liverpool Steamship Owners' Association in a joint memorandum declared more than two years ago (March, 1934) that renewed efforts should be made to restore international trade, and then affirmed :—

> The British Government after consultation with the Dominions should announce :—
>
> (1) That Imperial preferences will be enjoyed only by goods imported in ships belonging to countries which give fair play to British exports and British shipping.
>
> (2) That pending the revival of trade, *subsidy will, where necessary, be met by subsidy.* "Accordingly, when any section of the British Mercantile Marine can show that a temporary subsidy is necessary and will ensure its preservation for the time, H.M. Government should favourably consider the granting of such a subsidy, taking care not to prejudice other sections of British shipping thereby."

So far the only action which has been taken in this country is

(*a*) that "cheap money" has been provided for the building of the "Queen Mary" and her sister ship, and for the construction of a limited number of tramp ships, the loans being made at a rate of interest which represents a profit to the Government and, therefore, for the taxpayer —money is now very cheap when the Treasury asks for it; and (*b*) that in 1935 and 1936 a tramp subsidy, not exceeding £2,000,000 per annum, was voted *on conditions*, with the result that the money has benefited not only British but foreign tramp shipping; minimum freight schemes were introduced, rates were stabilized, and they have since risen.

So far, the Empire Governments have actually done nothing to defend British shipping, though action may shortly be taken. In the first place, the Imperial Shipping Committee has been considering the general situation in the Pacific Ocean, but only in the Pacific Ocean. In those waters American liners, built as to 75 per cent. of their cost with money lent by the Treasury at Washington at a low rate of interest, and operated with generous subsidies at the rate of ten dollars for every mile run, have made it impossible for British vessels to make ends meet, especially as they are debarred by the United States coasting law from doing any trade with Honolulu. How the American policy works was illustrated recently when it was arranged that the ships should make extended sailings from San Francisco to Los Angeles at the American end, and from Sydney to Melbourne at the Australian end, so as to secure more mileage subsidy without regard to the economic justification of the extension. The Imperial Shipping Committee has recently completed its report, and as the recommendations affect not only the British Government, but the Governments of Australia, New Zealand, and Canada, some time must elapse before anything is done. Secondly, after two years' consideration, the New Zealand and Australian Governments are making a not unimportant contribution to the solution of the Pacific problem. Legislation is being passed by the Parliaments at Wellington and Canberra which would exclude subsidized ships from the traffic across the Tasman Sea, which has been passing more and more to American vessels; but it will not be put into operation until the Americans have had an opportunity of reviewing the new situation. It is, of course, a local matter, but it may be hoped that it is a sign of the consolidation of opinion throughout the Empire in favour of defensive measures. But though the Imperial Shipping Committee has prepared its report on the Pacific problem and New Zealand and Australia are proposing to close the Tasman Sea to subsidized foreign shipping, British liners will be still exposed *without defence* to the full limit of unfair competition on all the trade routes.

The problem is not an easy one to solve, for there are really two

problems—one affecting the liners, and the other the tramps. In order to solve the former, the co-operation of the Dominion Governments is necessary. Were the British Empire to formulate a definite shipping policy and show its determination to enforce its shipping rights, the whole outlook for British liners would be changed. If bilateral trade agreements between this country and each Dominion were to take the place of the Ottawa Agreement, there would be no difficulty in ensuring that Imperial trade gained the benefit of preferential rates only when that trade was carried in Imperial ships. With such inter-Imperial trade definitely secured to them, British liner companies—passenger and cargo—would be strongly entrenched in their competition with subsidized services on extra-Imperial trade routes.

The tramp problem is one for the United Kingdom Government. It must be apparent that the provision of a sufficient *number* of tramp ships is necessary for the defence of these islands, and if the carrying capacity of that number is in excess of the cargoes available, the surplus cannot, for financial reasons, be provided by private owners and kept in idleness in peace. On the other hand, if trade opportunities were provided, owners would be ready, and indeed eager, to supply the tonnage. These trade opportunities could be provided if the Government made use of the immense purchasing power of this country to ensure cargoes for British ships. We import vast quantities of food and raw materials, far more than any other country, but little more than one-half of those supplies, though we pay for them, come to us in British ships. As we command the largest and richest market in the world, it has been claimed with some reason that we are entitled so to act that the maritime industries gain the support that they need, not as a matter of profit to individuals, but as a matter of strength, economic and defensive, to the nation. Sir Charles Hipwood, who was for many years the Secretary of the Marine Department of the Board of Trade, recently made a significant statement. " In the case of trade and manufactures," he remarked, " this country was forced to adopt protection and make special trading arrangements with other British countries, and it is possible that we may have to combine these two elements in some new scheme of Empire-wide protection if we are going to maintain our shipping."

The Speech from the Throne on the opening of the new session of Parliament contained two paragraphs bearing, the one directly, and the other indirectly, on shipping. It was stated, in the first place, that " the position of shipping is receiving the careful consideration of My Ministers, with a view to deciding what measures are required to secure the maintenance of a mercantile marine adequate for the needs of the

country." In the second place, it was announced that an Imperial Conference would meet in May. Both announcements encourage the hope that at last the problems of shipping will be treated, as they should be treated, as problems affecting everyone in the British Empire.

In conclusion, we are, it is obvious, confronted with a grave crisis in respect to the *material* and *personnel*. After all, there are 45,000,000 people in the British Isles, most of whose food as well as raw materials for the factories must reach them from overseas, not to mention the oil fuel, which is now almost as essential as food since without it neither the Navy, Army nor Air Force could fight. The ruin of British shipping would mean starvation in idleness for the people of the United Kingdom under war conditions. And, last but not least, the British Empire is incurably maritime, and apart from the problem of defence, the future of inter-Imperial trade depends on the prosperity of British shipping.

APPENDIX.

TABLE I.—*Steam and Motor Tonnage*, 1914–36.

Countries.	1914. *Tons Gross.*	1936. *Tons Gross.*	*Difference* 1936 *and* 1914. *Tons Gross.*	*Per Cent.*
Great Britain and Ireland	18,892,000	17,183,000	— 1,709,000	— 9.0
British Dominions	1,632,000	2,990,000	+ 1,358,000	+ 83.2
Denmark	770,000	1,134,000	+ 364,000	+ 47.3
France	1,922,000	2,973,000	+ 1,051,000	+ 54.7
Germany	5,135,000	3,708,000	— 1,427,000	— 27.8
Greece	821,000	1,801,000	+ 980,000	+ 119.4
Holland	1,472,000	2,507,000	+ 1,035,000	+ 70.3
Italy	1,430,000	3,057,000	+ 1,627,000	+ 113.8
Japan	1,708,000	4,216,000	+ 2,508,000	+ 146.8
Norway	1,957,000	4,054,000	+ 2,097,000	+ 107.2
Spain	884,000	1,146,000	+ 262,000	+ 29.6
Sweden	1,015,000	1,507,000	+ 492,000	+ 48.5
United States—(Sea)	2,027,000	9,434,000	+ 7,407,000	+ 365.4
(Lakes)	2,260,000	2,471,000	+ 211,000	+ 9.3
Other countries	3,479,000	5,824,000	+ 2,345,000	+ 67.4
Totals	45,404,000	64,005,000	+ 18,601,000	+ 41.0

TABLE II.—*Ratings of Seamen employed on Seagoing Vessels (except Yachts) registered in the United Kingdom, the Isle of Man and the Channel Islands.*

Employed on 3rd April, 1911.			**Employed on 26th April*, 1931. (*Irish Free State ships* not *included*).		
Deck Department:			*Deck Department:*		
Masters	7,995		Masters	4,072	
Deck and navigating officers	12,578		Deck and navigating officers	8,775	
Other ratings	51,511		Other ratings	34,405	
		72,084			47,252
Engine Department:			*Engine Department:*		
Engineers	17,589		Ships' engineers	14,641	
			Other engineers	1,184	
Other ratings	38,590		Other ratings	23,938	
		56,179			39,763
Stewards' Department		37,046	*Stewards' Department*		33,017
			Cattle and Horsemen		54
Total seamen other than Lascars		165,309	Total seamen other than Lascars		120,086
Lascars		42,905	*Lascars:*		
			Deck Dept.	16,096	
			Engine Dept.	19,726	
			Stewards' Dept.	13,303	
					49,125
Total Coasting, Home and Foreign Trades		208,214	Total Coasting, Home and Foreign Trades		169,211
*Fishermen engaged on vessels registered under both Part I and Part IV of the Merchant Shipping Act, 1894		25,054	*Fishermen engaged on vessels registered under both Part I and Part IV of the Merchant Shipping Act, 1894		21,293
Grand Total		233,268	Grand Total		190,504

* Fishermen engaged on boats registered only under Part IV of the Act, which consist primarily of small craft engaged in local fishing, are *not* included.

DISCUSSION.

REAR-ADMIRAL A. H. TAYLOR: The Lecturer mentioned a great many of the practices which have been used against us. The whole subject is extremely difficult to study because of operations which take place within the compass of large trusts with all sorts of ramifications; for instance, in Japan there are the ship-owners, the shipbuilders, the buying side of the cotton business, the actual textile factories, and finally the selling organizations—all in one ring. One cannot find out what is taking place inside that ring, but we know that a few years ago the P. & O. Company did practically all the trade between Calcutta and Japan, whereas now the Japanese are doing over three-quarters of it. It is difficult for us, organized as we are, to compete.

Another point to which the Lecturer referred was the enormous dependence of this country—outside the obvious lines of shipping employment—on the sea. One might go even further and say that there are a great many trades and industries in this country which would never have settled in these small islands if it had not been for our control of sea-going trade throughout the world. Some people say that half the population of this country depends directly or indirectly on the sea, and that if we lost our position as the principal shipping nation a great many of those people would lose their jobs.

A large part of the reduction of deck and navigating officers in the deck department has, I believe, taken place in the ranks of the younger men. If we take the number of apprentices or their equivalent entering the service, we find that the falling off is even more serious than it appears to be from the figures the Lecturer has given us.

Another point in connection with subsidies is the continually increasing speed of ships. Subsidized ships are being built with a speed of 18 or even 20 knots, and the faster ships will get the best of the business. That is what the foreign subsidized shipping companies can afford to do, and we cannot.

Finally, there is a point which bears very much on the question of the tramp subsidy. A great deal of the business formerly done by tramps is now done by cargo liners—that is to say, cargo-carrying ships which run on a regular schedule, and consequently it will be much more difficult in the future, even when international trade does revive, for the tramps to run profitably. Tramp steamers are most essential from our point of view. When war or any emergency arises it is the big pool of the tramp steamers which has to solve the problem created, and if the tramps cannot be made to pay under ordinary circumstances it looks very much as if the tramp subsidy, in some form or other, will have to be kept going.

LIEUT.-COLONEL C. E. PIERSON: It is interesting to see from the figures given that Italy has more than doubled her shipping under this control which we seem to lack; it would be interesting to hear to what extent Russia, with another form of dictator Government, has effected an increase in her ships.

With regard to alleviating the present troubles, I think that the American and Western aspect should be entirely separated from the Eastern aspect of the problem, or we might have too much shipping where it was not required. The United States, Norway (who is keeping up the reputation she had in the Great War of being the third, if not the second, largest mercantile trader), and ourselves now own 50 per cent. of the world's shipping—an entirely new situation. I understand that the United States' shipping was worth very little formerly, but they have now come so largely into the picture, it seems to me that it would be fatal to quarrel with them;

on the contrary, we should talk the matter over in a most friendly way and try to keep the price of commodities down, while maintaining shipping as a naval reserve, if you like, in a secondary position, but, if war was not expected, certainly not overstocking the Western side with unnecessary cargo.

CAPTAIN SIR DAVID WILSON-BARKER, R.N.R.: There is one point which I was rather surprised that the Lecturer did not touch upon, i.e., that in addition to the food supplies and other things that we shall need in time of war there will be the question of oil for use in our merchant ships. In the last war I think that three-quarters of our ships were driven by coal, but the use of oil is very prevalent now.

A ship-owner stated the other day that we were seven hundred vessels short of the shipping we should need for our food supplies if war broke out, and he estimated that probably one hundred and fifty vessels would be sunk from the air within the first few months of the outbreak of any war. That is a matter which, of course, we must take into consideration. At the present time, I believe, efforts are being made to come to an arrangement whereby submarines will not sink ships if they cannot take them into port, but we have no provision with regard to what will be done from the air. It is quite likely that ships will be sunk in that way, and I do not see how any Power can stop that being done.

LIEUTENANT-COMMANDER A. FEARN, R.N.: It has been mentioned during the course of this discussion that the shipowners of this country have to compete with foreign Governments. I suggest that, on occasions, they have also to contend with the indifference of some members of our own Commonwealth. Not long ago we were trying very hard to persuade the authorities in a certain Dominion to make some more tangible contribution to Naval defence: concurrently with their decision that they were not prepared to do more than pay £20,000 a year towards maintaining Naval Volunteer Reserves, they gave a subsidy of about £250,000 a year to Italian shipping companies. I understood that this was some part of a reciprocal trade agreement with Italy—an agreement which was going through at that time; but, whatever the reason may have been for it, it struck me that it was a very short-sighted policy.

I was recently stationed at Port Said for several months, and during that time I was greatly impressed by the large number of foreign ships, particularly Japanese, German, and Italian, trading through the Canal. Italian ships, of course, fall into a special category; but the Japanese and German ships were mostly fast ships, and they were by no means all carrying full cargoes, and it was quite obvious to anyone that they were not being run as an economic proposition. In this connection, a shipowner remarked the other day that that was one of the troubles: owing to subsidies granted by their Governments, a number of foreign ships have been constructed of a speed, size, and general standard of maintenance which the trade, on the routes on which they operate, does not justify economically.

I should like to ask the Lecturer if he can tell me how, in the present very depressed state of British shipping generally, it is possible for certain firms to be doing very well. It is well known that a certain excellently run British shipping firm, whose name is a household word, has recently declared a handsome dividend and distributed a bonus to shareholders. It seems to me that that gives us a ray of hope.

THE LECTURER:

The shipping problem is an extraordinarily complex one, because a merchant

fleet consists of so many different special types of ships—the passenger liner, the cargo liner, the oil tanker, the tramp, and so on through a great range—and the specialization of shipping proceeds apace even to-day; there are, for instance, the very highly specialized ships which bring our food to us under conditions of freezing or of chilling. It is also true, as Admiral Taylor has said, that a new canalization of trade has been brought about by means of very complicated commercial organizations: for instance, the other day the Unilever Company wanted some oil tankers; the Germans had been unable to pay them a debt, so Unilever said: "How will it be if you build us the oil tankers that we require and then you write off the amount of the cost of the oil tankers in the bill? We should be quite satisfied with that arrangement." The result has been that by means of frozen credits and other expedients the German shipyards are now the only shipyards in the world which are working to absolutely full capacity. If you gave an order in Germany to-day for a ship I think you would have to wait a long time for delivery. That is an illustration of the point made by Admiral Taylor.

With regard to Russia, her shipping, like her trade, is entirely controlled by the Government. They are making great efforts to increase their shipping and they have met with very considerable success. They have bought a number of secondhand vessels and are building others. They tried to order some ships in this country, but British ship-builders are accustomed to having cash or short-term bills when they supply ships, and the Russians wanted a loan. By one means or another, however, Russia is building up a very large fleet of merchant ships and is finding employment for those ships, largely in delivering timber to this country.

So far as the United States is concerned, I entirely agree that the main difficulty in the way of solving the shipping problem has been the great anxiety of everyone concerned in this country to avoid a cause of conflict with the United States. I think that it may be possible in all cases of trouble to arrange matters without any quarrel. It is very difficult indeed to deal with this problem, because it is extraordinarily complicated. In America the cost of shipbuilding is from 50 to 100 per cent. greater than it is in this country, and the wages of officers and men are higher. The Americans say: "We are bound to have a merchant fleet as a complement to our war fleet, and we can provide it only by making up the difference between the more cheaply built and more cheaply run ships of other countries and our own ships." Under the subsidy law, they have paid a very generous subsidy, and they have succeeded to a considerable extent, particularly in the Pacific, in competing successfully against British shipping. In some cases British ship-owners have had absolutely to abandon trade which they had built up themselves.

As to Norway, she is not a great carrier in international trade, but she is a great carrier of oil. She has built a very large number of oil tankers which are chartered to other countries, and the amount of tonnage under the Norwegian flag engaged in carrying goods is comparatively small. Moreover, Norway does not subsidize her tonnage, nor do any of the Northern Powers. If we could find a basis on which to solve our own shipping problem in relation to the countries which subsidize their shipping, I am sure that all the Northern countries would do their best to second our efforts.

It is also true, as Admiral Taylor said, that liners are replacing tramps, and that is a very serious problem. Tramps are the ships which carry the great bulk cargoes which we need for manufacture in this country, and they are also ships which are most useful in time of war. Certainly we could not have won the late war if it had not been for the British tramp ships and the courage and heroism displayed by their officers and men.

With regard to the shipping company which paid a dividend and also a bonus, I think you will find in every trade that conditions vary, both as to the route upon which the trade is conducted (in the case in question a Far Eastern route) and as to the way it is managed and the prospects it has in view. It is very difficult indeed to argue from the particular to the general; but you have to take the general experience of shipping, which is that during the past fifteen years British shipping companies have lost heavily. The trouble from which shipping has suffered, apart from subsidies, is that the cycle of prosperity was long delayed. Now that it has apparently come, the real point is—how is the British ship-owner to be enabled to take advantage of the better conditions? If he cannot do so, the advantage will go to those who not only are earning freights in the open trade markets, but have in addition subsidies paid to them by their Governments and also the reservation of their coasting trade.

There is an enormous complexity of problems, and I have sometimes thought that the Government should agree to settle down to a serious conference. We had one after the War, but it came to nothing. The whole of the conditions have changed, and it seems to me that it would be well if we had another investigation into the conditions under which British shipping is carried on.

THE CHAIRMAN:

I am sure we are all very grateful to Sir Archibald for his lecture, and I think we must all agree with the spirit of everything he has said and that he has said it at the right moment. Certainly the picture that he has painted is rather a depressing one, and the problem is one that must give us all food for most serious thought.

Naturally the Admiralty have done a great deal of hard thinking on this subject in recent years. In fact, I am here because, as the Lecturer said, the Royal Navy and the Merchant Navy are complementary to each other. The health of one is a matter of vital interest to the other. I have only once before presided at a lecture here, and that was also on the occasion of a lecture on the Mercantile Marine.

Except in so far as any political issues have been raised, I should like to say that I agree with the Lecturer. He puts his finger on the real reason for what is happening when he points out that it was the experience of the late War which brought the countries of the world to appreciate the immense value of a mercantile marine, and how very adversely any particular country would be affected in time of war if it had a lack of merchant shipping. In reality, the problem with which we are faced is one, as the Lecturer has said, of the development of merchant navies by other countries, very often under uneconomic conditions. It is one of the phases of the extreme nationalism that has swept over the world since the War, and another phase of it is the attempt that is being made to make each country economically self-supporting in war, or, at any rate, self-supporting. When we realize that these tremendous factors are behind this merchant shipping problem, we appreciate what an immensely difficult matter it is to deal with. In the past, foreign countries were content for us to carry their goods. Now they are no longer willing that we should do so, and I am afraid that we have no means of compelling them to let us do so. How are we to deal with the question? No doubt it is being carefully considered by those responsible, and it was mentioned in His Majesty's speech at the opening of Parliament. Some help has been given, as the Lecturer has pointed out, by the tramp subsidy, and I have no doubt that the particular case of any shipping line threatened by subsidized competitors must always receive special consideration. Whether the adoption of a general subsidy policy by ourselves is going to be the

answer to foreign subsidies, in the same way as in some respects protection has been an answer to foreign tariffs, is a matter on which I am not qualified to judge; it is a very difficult political problem. I do think, however, that when there are exceptional conditions, such as our Mercantile Marine is faced with to-day, we have a justification for adopting exceptional measures—measures which in normal times we might be most reluctant to take.

Having said how fully I support what the Lecturer has said, I should like to mention that there are one or two factors on the other side which go some way towards relieving the darkness of the picture. For instance, while it is true that the number of British ships has decreased considerably, the figures are not perhaps actually so bad as the Lecturer indicates. If we include the Dominion and Colonial shipping, then the reduction is only 1,000 ships since 1914, instead of 2,000, and I think we should include the Dominion and Colonial shipping in order to get a fair picture. Also, if the tonnage of the Empire shipping is taken as a guide, the decrease is only 1 to 2 per cent. since 1914. Again, the average ship, as the Lecturer has said, is now faster than it was in 1914, and, after all, the port facilities are very much improved for tackling our supplies in our ports. Those two factors increase our carrying capacity. Fewer fast ships are clearly easier to form into convoys than more slow ships, but, as the Lecturer has pointed out, the bigger ship means more eggs being put in one basket, and the loss of an individual ship becomes a more serious matter.

Another point is that the Lecturer puts the present British share of world tonnage at 26.8 per cent., whereas I am informed that the Board of Trade figure is 33.1 per cent., to which it has declined from 47.6 per cent. in 1914. It must be remembered, however, that in the same period the total world tonnage has increased by 42 per cent., i.e., from 43,000,000 tons to 61,000,000 tons.

The situation with regard to personnel is serious, but I think I can safely say that we have not yet reached the position, forecast by the Lecturer, when merchant ships will have to be laid up in time of war owing to the demands of the Navy for merchantmen. We are indeed trying to augment our reserve. As you know, we attach the greatest importance now to the Royal Naval Volunteer Reserve; it is being steadily increased and is becoming yearly more important. I hope that, by means of certain steps which we have recently taken in the development of the Royal Naval Volunteer Reserve, some of the difficulties which the Lecturer has foreseen and which we had in the late war may be overcome.

The Lecturer made the point that, while we have fewer ships of our own to-day than we had in the late war, we can no longer rely to the same extent on foreign help, despite the fact that we should need such help to a much greater extent. This must remain, of course, a matter of conjecture, but it should also be remembered that, as foreign nations have more ships of their own, we ought not to have to help our allies to the same extent as we did then, when some 23 per cent. of our own shipping was employed in their service.

I mention these points merely to balance the picture, as I say, and not in any way to discount the enormous importance of what the Lecturer has told us. Indeed, with his main contention and his view of the seriousness of the problem I entirely concur, and I commend them to your notice. The Merchant Navy does need support, and anything which will strengthen it will not only be welcomed by the Admiralty, but will have their very keen support.

The customary votes of thanks to the Lecturer and Chairman were carried by acclamation.

FOOD SUPPLIES IN WAR TIME

By Sir Herbert Matthews, Kt.

On Wednesday, 18th November, 1936.

General Sir Felix Ready, G.B.E., K.C.B., C.S.I., C.M.G., D.S.O., in the Chair.

The Chairman introduced the Lecturer.

LECTURE.[1]

THE problem of food supply in war time dates back to the earliest military operations; in fact it is prehistoric. Neglect of this aspect of warfare has been more decisive in effect than all other factors. It is, with us, the first line of defence, yet it is least understood by "the man in the street."

I have lived with it since 1897, and may claim to have had a small part in the movement which culminated in the appointment of the Royal Commission on Supply of Food and Raw Material in Time of War which was appointed in 1903 and which reported in 1905. The Minutes of Evidence and Appendices contain much useful information, but the Report itself is worth little: much of its language is ambiguous, and several Minority reports and reservations detract still further from its value. Certain of its recommendations were acted upon by the Government between 1905 and 1914, and the action taken justified the Commission so far and proved beneficial under the stress of war, but surely no Royal Commission ever had its main conclusions so completely upset as were these by the experience of war. Seldom is a Minority Report so justified as was that signed by the late Duke of Sutherland, the late Lord Chaplin, Sir Henry Seton-Karr, Mr. J. Lloyd Wharton, M.P., and Mr. H. H. S. Cunynghame. Referring to my records

[1] This lecture was delivered ten days before the announcement that a Food (Defence Plans) Department was to be set up within the Board of Trade under a Director, who would co-operate with the Minister for the Co-ordination of Defence as chairman of the Sub-Committee of the Committee of Imperial Defence on Food Supplies in Time of War, in order to continue and complete the formation of plans for the supply, control, and distribution of food and feeding stuffs for defence purposes.—Editor.

I find that in an article in *The Morning Post* in May, 1910, I said :— " The more it (the Report) is studied the more it forces one to the conclusion that it was drawn up more with a view to calming a growing public apprehension which was inconvenient to the then existing Government than to present a true statement of the case. There is but one justification for the adoption of such a course, viz., that the truth was so alarming that they feared to put it into black and white."

On the other hand, the following passage occurs in the Minority Report :—" Moreover, the Admiralty themselves admit ' that the policy of attacking the floating trade of a country has always played an important part in maritime warfare ' ; and, unless a repetition of that policy is shown much more clearly than it has been by anything we have heard at present to be most improbable, if not impossible, in the future, we shall continue to think our position as regards our food supplies in time of war is unsatisfactory in the extreme. And, further than this, the stake at issue is so vast, involving as it does the fortunes of the Empire and the sufferings of so many millions of our population, that we cannot regard the present position as otherwise than a source of possible danger against which provision should be made in time. " The difficulty which would arise in time of war from an insufficient supply of food within the country is the one link in the chain of all our preparations and expenditure for national defence, which is obviously and dangerously weak at present."

The thought uppermost in the minds of the few officials who knew anything of the subject in August, 1914, was how to allay public anxiety. There was need for thought, judging by the way in which well-to-do people besieged the food stores, and took home car-loads of provisions in the first days of the War. Those officials realized how this might degenerate into a panic, and they had little information to give to counteract it. However, they announced in the Press that there was five months food supply in the country and more was on the way here. That settled it : everyone said the War would be over by Christmas, so why worry ! At the end of five months the public mind was so full of other matters, and the food supply was apparently ample, so the whole matter was forgotten until 1917, except by the few who knew the position. What would have happened if Germany had declared war in February instead of in August, and if, some week or two in advance of declaring war, she had cornered the wheat crop in the Argentine—that being the season for exporting from that country ? I believe that the War really would have been over in five months, or less, for there is seldom as much as six weeks supply in the country after Christmas, and often much less.

Although I had studied this question for many years before 1914, and had visualized fairly well the whole position, I overlooked two very important factors: first, the large proportion of agricultural workers in the Reserve who would all be called away from the land just at harvest time; second, that the Government would commandeer such a large number of agricultural horses. But that is what happened, just when all parties were appealing to farmers to increase the quantity of home-grown food. There will be in degree a recurrence of these conditions, because, owing to the political neglect of agriculture between 1920 and 1932, the number of workers was largely reduced, while of the number left, there is a larger proportion of older men. Fewer men would leave the land, but the loss of these few would be proportionately greater. Mechanization of the Army and on the land may mean that fewer horses will be wanted, but those commandeered will be in proportion a greater loss. There were 40,000 fewer male workers on the land in 1934 than in 1931. So far as I am aware no one knows how many horses there are in the country. An annual census of agricultural horses is taken by the Ministry of Agriculture, but of the numbers employed in industrial and commercial work I can find no figures. Besides these there are hunters, racing, and carriage horses. A complete census is wanted, showing the different classes as well as mere numbers. The Army needs two types—the cavalry charger and heavy draught horses. No one can say how many of each type may be wanted until the time comes, but we could at least know where to find any given number of each type by organizing this matter beforehand. About the year 1908 this question occupied considerable attention, and suggestions for a complete census were then put forward. The only county where this was done was Devonshire, where, thanks to the patriotic energy of the late Earl Fortescue, a complete census was prepared. If this were done in every county, many of the scandals of 1914 would be avoided, such as the case of a farmer who found practically all his horses taken at a moment's notice while a neighbour lost none. Statistics show that there were 114,000 fewer agricultural horses in Great Britain in 1934 than in 1929. That decrease continues year by year.

The whole position was more fully realized by officials in the Board of Agriculture, as it then was, than elsewhere, but this knowledge was not made use of by the Government for many months. It was not until 17th June, 1915, that Lord Milner's Committee was appointed with the following reference:—"to report what steps should be taken, by legislation or otherwise, for the sole purpose of maintaining and, if possible, increasing the present production of food in England and Wales, on the assumption that the War may be prolonged beyond the harvest of 1916."

It took a further seventeen months before they realized the submarine danger and set up the Ministry of Food. That ponderous and over-staffed Department, creaking noisily, got down to its work with enormous effort, and did eventually accomplish a good deal, but at what a cost of energy and waste of time. I submitted the outlines of a scheme on 8th August, 1914, to the Consultative Committee of Agriculture, set up on the outbreak of war, for controlling the supply of meat and breadstuffs, and had that scheme been developed it might have been worked by the Board of Agriculture—the proper authority, without the creation of a new Department, and without the loss of two valuable years. My suggestions were not even considered by that Committee.

Are the mistakes and muddles of 1914–18 going to be repeated in the next war? Have we learned nothing by experience? The Committee appointed by the Minister of Defence would be well employed in deciding what *not* to do next time; and all this preliminary work should be ready to be taken out of the pigeon-holes and put into operation directly a crisis occurs. Let us glance for a moment at some of the facts that are new, or so developed as to be new in effect, as compared with 1914: the population has largely increased; our Mercantile Marine has been greatly depleted; the submarine is a far more terrible weapon of offence than it was then; aeroplanes are an almost unknown force for all forms of attack. So far have things advanced since 1918. Even in 1917, with our Navy at its strongest and with many of our cargo ships and liners armed, we were only partially able to protect food supplies while much raw material that was greatly needed could not be transported at all. The losses of food ships were incredible, sometimes even in sight of port. Yet we are told that we then had "command of the sea." We never did have "command of the sea," and with to-day's conditions we should be in an even worse position than in 1917. The strength of the Navy was frittered away for convoy work,[1] ships went half a world off their proper course in order to avoid what were considered the most dangerous routes, and only a proportion of them managed furtively to creep home and deliver the cargoes with which they started. And what confusion! What waste! What incompetence was shown! One large liner carrying several thousand tons of food, to my knowledge, came into Plymouth harbour, was ordered to go up Channel, was torpedoed just outside the harbour, and all the

[1] It is misleading to say that the "strength of the Navy was frittered away for convoy work." The primary reason for which the Navy exists is to keep open our sea communications, and escorted convoys proved to be one of the most effective methods of defeating the submarine menace.—EDITOR.

cargo lost.[1] To how many more did this happen of which the public heard nothing? Mr. Lindsay, speaking on the Navy Estimates last March, talked of our having "command of the sea routes." If we lose that command, he said, "oil, along with other equally vital commodities, also goes." *The Times*, in a leader last March, referring to oil, said: "the present gap between total consumption and the total supply produced in this country is so enormous that no agency for making some part of it good should be neglected." That is true of oil: it is even more true of food.

I should have said something about the present position of our shipping industry, because the question of food and fuel supply is inseparable from ships; but I am glad to see that Mr. E. H. Watts, Chairman of the British Steam Ship Company, is here, and I am going to leave that side of the question to him. He has made a study of that problem, and can deal with it as an expert.

There are three principal commodities of which it is essential for the country to have large stocks in hand, and to very much increase home production; they are wheat, timber, and oil. Imperial Chemical Industries are doing something as regards oil, and it is to be hoped that their enterprise will prove successful and that further plants may be installed and production increased, but I hope they will be placed in a less convenient position for enemy aeroplanes to reach them than at Billingham. Agriculture is a large consumer of oil now, and if its supply were cut off and horses are taken away, what must be the result? As regards timber, I will summarize one passage from the Report of the Forestry Sub-Committee, 1917 (Cd. 8881). Imports of timber in 1915 were three-fifths, and in 1916 two-thirds, of pre-war normal imports, and cost the taxpayer £37,000,000 more than the same quantity at pre-war prices. These two years imports occupied seven million tons of shipping. The area under woodlands in the United Kingdom before the War was estimated at three million acres, which produced about forty-five million cubic feet of timber; this was less than 8 per cent. of the nation's consumption. In order to make the country independent of imported timber for three years in an emergency, it is necessary to afforest at least 1,110,000 acres. The area of rough land in Great Britain capable of growing first-class coniferous timber of the same character as that imported is not less than three, and is probably more than five million acres, and the conversion of this land into forests would not decrease the quantity of home-grown food more than the merest fraction,

[1] As regards the one or two instances of a merchant ship which had arrived safely at her home port being sunk after being sent on to another, the reader is referred to Lieutenant-Commander Fearn's remarks in the Discussion, p. 68.—EDITOR.

possibly 0.7 per cent., but it would find employment for ten times as many men as are now engaged on that area.

Thoughtless people are saying that land which should be growing food ought not to be covered with forests. The point is that land suitable for first-class timber is not land that would produce any material quantity of food. The policy which the Forestry Commission have adopted has reduced even the small percentage of 0.7, for the creation of small holdings in connexion with forestry will mean more intensive production than would have been possible on most of the land the Commission are dealing with. The Forestry Commission are doing excellent work in the direction of increasing the supply of home-grown timber, and they deserve all the encouragement we can give them and still larger grants from the Government to enable them to expand their operations. The question of altitude alone is enough to silence critics who argue against the use of land for timber. Generally speaking, wheat cannot be grown in this country at a higher altitude than 500 feet above sea-level; oats can be grown at a slightly higher altitude, and potatoes possibly still higher than oats. There are 9,500,000 acres in Great Britain lying between the 500 and 750 feet altitudes, providing nothing but scanty grazing ground for sheep, and an area for sport. There is a further 11,000,000 acres above the 750 feet, of still less value, though how much of this can produce timber remains to be demonstrated. Professor Haldane urged in *The Times* a few months ago that, because we only produce one-fifth of the wheat we need, and because we cannot increase that to more than two-fifths except by extraordinarily uneconomic methods, it would be sounder policy to devote any money expended by any form of Government assistance to increasing the amount of other kinds of agricultural produce. If one could look at this subject from the purely economic point of view, and if we could eliminate all possibility of war, I should agree. But this is no more a simple question of economics than is the upkeep of the Navy or the Army: it is the most vital part of national defence. I venture to say that if Professor Haldane had been engaged in the Ministry of Food during the year 1917 he would have held other views. If he had seen the deluge of letters that some days nearly swamped the Department, begging for permits to enable the writers and their families to continue to obtain fine white bread because the war-bread upset their interiors, the abuse showered upon officials for expecting people to eat the bread offered to them—and this added to the misery of queues, to the shortage of sugar and meat and butter, he might have realized, with the graver dangers we face to-day as compared with 1917, that wheat is the basis of the home production of food. What people seem unable to realize is that a larger area of wheat means of necessity a larger area of other

crops, and a lesser area of grass, that much more food can be grown on arable land than on grass, and that more livestock can be carried on arable than on grass land. "Keep the plough going," is the motto for defence. Under existing circumstances, it may be a wiser policy, from the individual's point of view, to concentrate on the more perishable agricultural commodities than on cereal crops; but what may be good for the individual may well be disastrous for the nation. Of what use is an over-production of milk, cream, butter, fruit, vegetables and flowers, when the masses are clamouring for the necessaries of life, and these necessaries are absent? Can we picture shops and hawkers offering costly fruit and flowers to a hungry mob craving for bread and meat? Will queues form up for salads while their demand is for solid food and sugar? I admire the enterprise and energy shown by many farmers in the enormous increase in the production of fruit, vegetables, flowers, and salads, under the protection of a tariff; but I submit that this is no more economic than artificially increasing our wheat production. This is not a farmers' question, though incidentally farmers may get some benefit out of it, if the subject is properly organized and carried out.

As a result of experience during the War, I have had to modify my views in one respect. I used to maintain that the only sound way to store wheat was to keep it in stack on the farms. There are many factors in favour of this method still, but only under the very greatest pressure is there any probability of the home crop being increased by more than double the present average, and that is not enough to give the nation security; so I am forced to the conclusion that we ought to hold at least six months supply in silos, or elevators, and aim at having a further six months supply in stacks. By the time these stocks were exhausted there would be a further six months' supply ready for harvest. These elevators should not be concentrated at the ports, but be scattered over the country, in order to save transport at a time when every railway truck is needed for war purposes, and in order to spread the risk of loss by enemy action. They should be underground, and effectually covered against destruction from aeroplanes. They will have to be stocked mainly with Dominion grain, as that is drier than home-grown.

The control of these elevators should be in the hands of a Wheat Commission, who should keep a constant watch on the condition of stocks, should make all purchases, and order sales when necessary. This Commission should be appointed by Parliament, should present an annual report, and be responsible only to Parliament.

I am aware of the following disadvantages of this method of storage:—(1) whenever the Commission is known to be buying, the

price will go up; and when it is known to be selling, the price will go down; therefore care must be taken to carry out these transactions secretly; (2) the whole expenditure involved will be unproductive; (3) the sale of wheat will generally involve a loss on each transaction, because the sale will be due to the wheat having deteriorated—or being likely soon to deteriorate—it will be, in fact, a forced sale.

On the other hand, I attach the greatest importance to the steadying influence on markets that the existence of this stock will have in all times of crisis. The manipulations of gamblers are unseen, but are a grave potential danger and might be disastrous in times of crisis. The basis of gambling is centred on this country's needs. This is a risk we face at all times, quite apart from war. The population may at almost any time be at the mercy of the speculator and the international financier. Why does the price of wheat generally show a tendency to rise in July? It is because there is then no English wheat left, so the speculator has the control of the world's wheat market.

A further danger is that the food supply is dependent upon the shipping and transport services. I do not want to accuse the workers of those services of what is not in their minds, but if we put a weapon into a man's hands we must not be surprised if he uses it. If the food supply is concentrated at a few points, a strike will endanger the whole population. If wheat is stored in elevators and stacks spread all over the country this risk is minimized. Another factor is that our Government is handicapped in its foreign policy when the whole world knows the position of our food supply. Germany counted more on that than on anything else to keep us out of the War. I will recall two instances of market manipulation by speculators; there have been others of less importance, but circumstances were not helpful to speculators, and they passed off unnoticed. In 1898 the Leiter corner in wheat drove the market price up 12s. per quarter in a few days. Fortunately, Mr. Leiter then started buying options as well as wheat, and so smashed his corner. In 1924 a group of speculators worked up a well-organized campaign in the Press, telling the public that the Canadian wheat crop was a partial failure. They managed to send the price up several shillings before the truth came out and it was established that the Canadian crop was up to the average of the previous ten years.

One further point in favour of storage in elevators is that there is a considerable carry-over from last year's crop, and the price is low, so that a stock could be bought now on terms which should not involve a loss for a fairly long period.

In view of the foregoing, I may be asked why I limit storage in elevators to six months supply; why not the full twelve months that

I consider the necessary minimum ? My chief reason is that whatever means may be adopted for increasing home production, and whatever expenditure those means involve, the outlay will be productive ; not directly to the national exchequer but to the nation. Every pound's worth of produce from the soil is one pound of new wealth to the nation, and if we double our wheat crop we double the new wealth from the soil to that extent. Let me repeat that an increase in wheat acreage does not mean the displacement of some other crop, but a change from pasture to arable farming. Incidentally, I may mention that arable farming employs twice as many workers as grass farming.

How is this increase in wheat acreage to be brought about ? There is only one way, and that is to guarantee to the growers a minimum price for all marketable wheat that they sell. When I was occupied with this subject in the early years of this century I asked various Farmers' Clubs in arable districts if they would undertake to double their area of wheat with a guarantee of a minimum of 40s. per quarter. They agreed gladly, provided that the guarantee was fixed for a sufficiently long time : it would be useless to offer it for one, two or three years ; it must be for an extended period. Those were pre-War days, and prices, especially wages, have gone up materially since then ; to-day, a guarantee of a minimum of at least 45s. per quarter would be necessary to get a sufficient response. The guarantee implies that if the market price falls below 45s. the grower would be entitled to a bonus amounting to the difference between the market price and 45s. This should only apply to wheat threshed and sold in the open market after 1st February in each year, with an additional bonus on such wheat as was held till later dates. It is a fundamental part of this proposal that the bonus must be paid per quarter (or per hundredweight) and not per acre. The scheme must encourage the production of both quantity and quality, and payment per acre will encourage neither. Pay by results so that, if the quality was below average, the grower—even with the bonus—will obtain less than 45s. Payment per acre was the fatal mistake made in the Corn Production Act of 1917, which the Government had to repeal in 1921. Beyond the small cost for administration by the Wheat Commission there would be no expenditure on buildings, no interest on capital outlay, no loss (to the Exchequer) from deterioration, or from market manipulations. Wheat improves in quality by being kept in the stack for six months, and it would be to the growers' interest to prevent damage by vermin or weather. The amount of bonus to be paid should be decided by the Wheat Commission periodically, say once a month, and their decision be published by the Ministry of Agriculture in their weekly Bulletin. There will be no difficulty in grafting my proposal for a bonus on to the present method practised under the Wheat Act of 1932. I

will not point out the difficulties that may arise in organizing and working this scheme of a bonus—I know them all, and there will always be plenty of critics to bring them forward ; but I am prepared at the right time to submit a complete scheme in the right quarters. There were many opponents to the proposals put forward in 1931–32 which culminated in the Wheat Act, but that Act is now accepted generally as beneficial. In *The Times* of 23rd March last was a letter from the President of the National Association of Corn and Agricultural Merchants (Mr. W. Watters) urging the extension of the Act, because of the advantages it has brought to the majority of English counties.

A great deal of attention was given by the Royal Commission on Food Supply to the subject of an indemnity to owners of ships and cargoes lost through enemy action, and the Majority recommended some form of national indemnity. This subject was dealt with by a further special inquiry, and resulted in the Government undertaking to indemnify owners against loss. On this point the Minority said :— " Under such a scheme the position of shipowners would be as follows : If a material amount of any particular commodity should be captured at sea, the remainder which arrived in safety would be enhanced in price and this increase would be the direct gain of the importer. He would also claim no doubt to be paid for his losses on a scale increased by the very cause in respect of which he was indemnified. All this time the shipowner, presumably, would be able to embark on any enterprise which in his opinion might be profitable to him ; and yet for anything we can see in the Report of our Chairman or the recommendation of our colleagues, the public, who would bear the loss without sharing the gains, the very gains indeed which would be made out of their necessities, would have little or no voice or control in the selection of the enterprise."

The public had not, and could not have, any voice in the selection of such enterprises ; they would not only lose the food so sorely needed, but, as taxpayers, have to pay the indemnity. This whole subject needs reconsideration. That it is necessary in some form in order to induce shipowners to face risks, is obvious, but the policy adopted during the War needs drastic revision.

Dr. Burgin said recently in the House of Commons that large facilities already existed for the storage of grain. It is true that for trade convenience there is a limited accommodation, but where is it ? Almost entirely at Hull—perhaps the most vulnerable spot in the country, and at certain other ports. These grain stores give admirable marks for enemy aircraft, and if this is the sort of thing that satisfies Ministers who are giving these matters " consideration," then all I can say is " God help us, but we don't deserve His help." The storing of wheat,

the giving of a bonus, or the storing of oil safely, will mean expenditure, perhaps as much as the cost of a battleship ; but if, when accomplished, it costs as much as two battleships, it would free many warships from trying to defend the sea routes, and would leave the Navy free to carry out its proper work.[1]

It has been stated that the quantity of foodstuffs produced at home has increased 14 per cent. between 1930 and 1934, and this seems to have been so satisfying to the Government that they have repeated it *ad nauseum*. Whether they are really satisfied with that statement, or whether they think it will satisfy troublesome people who are concerning themselves with this problem is best known to the Cabinet. I do not consider an increase of one-eighth at all satisfactory, but very much the reverse. The increase in wheat production means that instead of three months supply which we have been growing for many years, we grew in 1935 about four months supply, but the crop of 1936 is unlikely to produce more than three months. The rest of the increase is chiefly in milk—which is largely sold at a loss and over-production of which is kept up by a subsidy, or in vegetables, salads, and flowers.

I was discussing these matters with a Government Official a short time ago. He was chiefly concerned to defend the inaction of the Government, but he assured me that all sorts of Departmental Committees were at work investigating every matter that I raised. (I know these Departmental Committees and Inter-Departmental Committees; they are very useful for finding employment for officials and creating reports which no one ever reads.) He defended the action of whoever was responsible for sending ships full of food to be torpedoed in the Channel, on the ground that the food was more needed in London than in the West of England, and that there were no conveniences for landing the cargo at Plymouth. " Convenience " ! I did not think that sailors waited for " conveniences," when there was a job to be done.[2] But he unintentionally did support my argument that wheat should be stored near the different centres of population, instead of concentrating it at the few chief ports. He asked why I suggested six months in stack and six months in elevators. Why not five months, or why not seven ? Really I find it difficult to even try to meet that sort of opponent, or that kind of argument. Why six months ? Why any period ? One must base a scheme on something, and eighteen months does at least give the Government or the Admiralty time to prepare their schemes for maintaining supplies. Also for that period at any rate it reduces the demand on the Navy for convoy work.

---

[1] See footnote on p. 56.—EDITOR.

[2] The real difficulty in most of these cases was local storage or rail transport, not difficulties of unloading.—EDITOR.

We have recently had much debate in both Houses of Parliament on Defence—about supplies of aeroplane parts, and a little about the Navy; but not a word about food supplies. True, Sir Thomas Inskip did remark in a jeering sort of way that someone had proposed to him that it was necessary to store wheat; but that was all he had to say. I cannot learn that the Government have advanced a step since this question of food supply was raised in the House of Commons six months ago. It does not appear that they have yet realized that ships and aeroplanes are quite useless unless the men to work them can be fed.

In conclusion, I want to call attention to a recent paper by Lord Lymington, entitled "The Place of Agriculture in Home Defence." In doing so I must quote from it just one sentence, because it shows how completely ignorant at least one member of the Cabinet was then. Lord Lymington said:—"Last summer Lord Hailsham in the House of Lords announced that in case of war there were plans for increasing food resources and expanding agriculture through the means of the established Marketing Boards. No greater moonshine was ever radiated over the urban populations who have forgotten all reality." May I point out that even Marketing Boards backed by all the weight of the Cabinet cannot expand agricultural production by issuing proclamations; it takes time, and nothing short of omnipotence can alter that fact.

DISCUSSION

MR. E. H. WATTS: Sir Herbert Matthews asked me to deal with the question of food and fuel as far as the Merchant Service is concerned. As far as food is concerned, we have not got enough cargo-carrying ships to do the job—not by at least seven hundred at the most optimistic calculation: a good many owners tell me that a thousand is much nearer the figure. With regard to fuel, nobody can say: in the late war the bulk of the foreigners burnt coal, and to get that coal they had to come to depots which were under British or Allied control; and it was a fact that, somehow or other, if they did not take an Allied charter-party they did not get any fuel, with the result that we were able to charter neutrals. To-day roughly 42 per cent. of our own Mercantile Marine burns oil fuel; of that, 30 per cent. of our cargo boats burn oil fuel which comes from foreign countries. Whether the Navy and the powers-that-be can arrange for that fuel, no shipowner can say. Certainly the position is not very happy.

You can build ships fairly quickly, but you cannot train your personnel quickly: that is one of our great difficulties to-day. Admiral Sir George Chetwode recently stated that the Royal Naval Reserve, consisting of 10,000 officers and men of the Merchant Navy, was "a most valuable reserve, as this force receives regular training with the Fleet." I have told the Admiralty on behalf of the Shipping Federation that they have not got a hope of those 10,000 men. We have thirty-three offices in thirty-three ports all over the country, manned by experts who do nothing else but look after personnel. I have here last week's reports of the actual facts as they exist. Instead of the 16,000 unemployed seamen which the Ministry of Labour tells us about, and from which no doubt the Admiralty hope to draw their 10,000,

we in the Federation, going through these men one by one in our different offices, find that there are only 1,153 efficient men—ordinary seamen or even deck-hands—available. In a place like Aberdeen, for instance, there are only one carpenter, one boatswain, two able seamen, and seven men available; at Dundee there are seven; at Falmouth five; at Plymouth three; at Grangemouth five; at Hartlepools ten; and so on. I will read you some of the remarks which will show you the position: "Bristol—there is a shortage of able seamen and ordinary seamen; we have great difficulty in completing crews. West Hartlepool—scarcity of all ratings for deck department, also engineers. Barrow—eight deck hands available, two boatswains. Liverpool—position regarding the supply of able seamen remains as reported last week; we can only trust that more ratings will be available and willing to accept employment offered in the future."

In addition to the main difficulty, there is the fact, which unfortunately does not seem to be generally recognized, that seamen are getting into two classes: there is the man who is available and is useful for the ordinary cargo type of boat—he has to be a much better type of seaman than the other class who is in passenger liners. The cargo-boat rating learns how to steer a ship and a hundred and one other jobs, whereas in passenger liners washing the paint and scrubbing the decks is the extent of a man's seaman-like qualities. Any suggestion that men can be diverted from passenger boats to cargo boats in time of war in order to steer our ships is very optimistic; they would want at least six months training before they could do that job. At the same time the Admiralty propose to withdraw from us certain of their ratings in the R.N.R. and R.F.R.; I understand that a good many of these men are our quartermasters. If they take our quartermasters away from our big ships to go into the Royal Navy I do not know who is going to steer them. They are probably the pick of our seamen.

Then there is a further point: when you are told that "in 1914 the Merchant Navy comprised some 9,000 ships manned by 230,000 officers and men," and that "to-day we have rather more than 7,000 ships manned by 180,000 officers and men," you have to be very careful of these figures—because they do not mean white men; they include blacks, yellows, and everything on two legs that can go to sea. It is not because we do not want to take white men; we give them the first chance, but they are not there, and we have to fall back on the others.

When we talk about the tonnage of ships, there again we have to be careful; you can go through the registers of the British Mercantile Marine, and you can get an entirely wrong impression as to what is the actual position, because you will find that everything over 1,000 tons is included in them—even such tonnage as the "Warspite," a floating crane, and an ice factory. The new "Queen Mary," when included in the tonnages, may very well disguise the fact that ten cargo ships have disappeared from our new registers; yet it is not on "Queen Mary's" that we are going to depend in time of war.

Even before the last war our Mercantile Marine was a declining industry: in my grandfather's time we had about 51 per cent. of the world's tonnage; in 1902, 46 per cent.; by 1914 we were down to about 37 per cent. That means that the average age of the personnel has become greater, and in consequence fewer youngsters have come in: there is a block in promotion. That has happened to an even greater extent since the War. The men who were serving us in the War were roughly about 36 to 40 on an average at that time; those men cannot be expected to stop at sea all their lives: some of them have become rather decrepit, and some of them have died. Again, the decline in the number of ships has made for a decline

in employment. Decline in employment has made for a block at the top, and fathers are not going to send their sons into an industry which they think is a declining one and where there is no prospect. That is why we have no men to spare from the Merchant Navy to-day, and so few available at the ports.

I cannot help feeling that until both the Admiralty and the Board of Trade appreciate the very serious position of the Mercantile Marine, not only from the point of view of ships, but also from the point of view of personnel, and finally from the point of view of continuity of an industry, our food supply in war is not going to be anything like safe. We shall have to depend on the foreigner, and I am very doubtful whether the foreigner will help us in our time of need.

ADMIRAL SIR GEORGE CHETWODE: Perhaps I ought to emphasize the fact that I am retired, and therefore I am not voicing the views of the Admiralty in any way.

One of Mr. Watts' main points is that the Merchant Navy cannot find 10,000 men for the Royal Naval Reserve. I can assure him that it can do so with the greatest of ease. Before the late war we started with 17,000 in the R.N.R.; we ended up with 40,000, and an additional 30,000 in the patrol services—and they never had to lay up a ship for lack of men. As far as the deep-sea ship is concerned, the general service section of the R.N.R. only takes some 2,000 men. A fortnight ago I checked my figures extremely carefully through the Admiralty liaison officer in London and the Registrar-General of Shipping, and the actual number of men belonging to the R.N.R. and joining from the general service section of the sea-going Merchant Navy was less than the number of unemployed seamen; so there would be no disorganization whatever as far as they are concerned. Many of you know that ships have a right to fly a Blue Ensign if they can muster seven men in the R.N.R., including the captain. How many ships in the Merchant Navy have got those seven men? What difference is seven men going to make to any big ship?

Mr. Watts suggests that if the quartermasters are taken—one or two here and there—to go to the R.N.R., then ships would have to lay up in harbour. I assure you that, with the necessary supervision of the officer on watch, any woman who nowadays handles a motor-car could perfectly well learn to steer a ship by compass in a very short time; there is nothing in it.

I consider that many of the troubles to which Mr. Watts refers have arisen because of the way in which the personnel of the Merchant Service has been treated by the owners. I suggest that it ought to be a national service so far as the personnel is concerned: it is as much a war service as the Navy, Army, or Air Force; we cannot exist in time of peace without it—we live by our exports, and in war time it is even more vital to us. The moment war is declared the crews of our merchant ships are in the front line—and more in the front line than the Army and Navy because they cannot shoot back. They suffered 15,000 casualties in the Great War, and they went to sea time after time after they had been torpedoed.

From the point of view of the officers, the Merchant Navy is a rotten career. I had three years as Admiral commanding the Reserves, and I have had many first-hand accounts of their hardships. I do not suggest that shipowners can now pay and provide money for pension schemes; but the country must. That is not to say that the shipowners could not have done a good deal more than they have done. How many shipowners die in the workhouse in these impoverished times? A shipowner who recently died left some £30,000,000; did he leave a penny to a single sailors' charity? He did not make all his money in shipping, but he got his start in shipping.

With regard to subsidies, the Lecturer wants us to subsidize sugar beet. Every

penny spent on subsidizing sugar beet, beef, wheat and all the rest of it, comes out of the shipping industry; that is not going to help the personnel. There are at the moment over a thousand unemployed officers. Nobody knows better than I do the ill-effects of a government interfering in industry—we have the examples of the American Shipping Board and what happened in Australia—I do not want to touch the industry, but I do want to touch its personnel. The crying need of the officers and men of the Merchant Navy to-day is security: they never know; shipowners sell whole lines—out goes every single officer; ships are sold—out goes every officer; shipping companies amalgamate. If you could have heard the stories which have been told me in my office by officers who have had to leave their ship with no hope of getting another you would have wept.

Under the present system, the Board of Trade allows unlimited entry into the ranks of officers. In 1934 they granted seventy mates' certificates every month; in the last eighteen months they have granted fifty-six certificates every month. The industry cannot absorb them. What we want for the Merchant Navy is some form of pension scheme; I know some companies have excellent pension schemes, some of which are contributory by shipowners and their officers; but those are only a few. The pay of the officers in the Merchant Navy is awful: a first officer gets roughly £24 a month—as much as you pay a typist; their life is the hardest in the world; you may say that for what they are and who they are they are given as much as if they were in the Civil Service; but think of what life means to them and of their responsibilities.

MR. WATTS: The shipowners themselves want to put these matters right, and I do very much indeed take exception to Sir George Chetwode's remarks in view of the fact that the whole of the shipowners' organization was open to him and he never took advantage of their offer to go to it for his facts.

ADMIRAL SIR GEORGE CHETWODE: I have examined many sources of information. On the question of the manning of the sea services I believe all the facts I have produced to be correct. My information is supplied by the Admiralty, by the Registrar-General of Shipping, and by various societies.(1)

THE CHAIRMAN: We have had enough about the Shipping Federation, and we will now get back to the subject of food supply in war time.

REAR-ADMIRAL THURSFIELD: I am anxious not to appear to deprecate the seriousness of the position as put before us by the Lecturer; but a good case is not strengthened by faulty arguments and there are two of his which seem to me to be hardly justifiable. He said that if Germany had declared war in February, 1914, and at the same time cornered the Argentine wheat crop the War would have been won in a few months: the implication is that merely cornering that crop would have prevented our getting it. There was only one way of preventing our getting wheat if it was available in the world, and that was by preventing it coming to us by sea. Germany was never in a position to do that; she came near it in 1917; but she was never anywhere near it in 1914. No financial operations would have destroyed the wheat itself; and unless it had been transported to Germany before War broke out, it would have come to this country.

Then he said that the submarine to-day is a far more terrible weapon than it was in 1914. I would like to question that statement also. The submarine to-day can do nothing it could not do in 1914, but there are many things which can be done against it now which could not be done then. Submarines, even as used by Germany against non-combatants, were in the process of being mastered in 1918

(1) See Correspondence, p. 194.

with the technical apparatus we had at our disposal then. In this respect I presume we should start the next war, not where we started the last one, but at least where we left off, if not further on.

All the remarks we have heard this afternoon emphasize the enormous importance to this country of the Merchant Navy, of its well-being, and of its correct organization and handling. I would suggest that the inference is the great desirability of removing such control as the Government exercises over it from a subordinate section of a Department burdened with many other duties—the Board of Trade—and creating a Ministry of Shipping. In France, which is not nearly so dependent on the welfare of its Merchant Navy as this country is, they have a Minister of the Mercantile Marine. If any country in the world needs such a Department of Government surely it is this country.

CAPTAIN SIR DAVID WILSON BARKER, R.N.R.: I should like to emphasize what the Lecturer has said about food being the basis of the defence of this country. We should have a proper storage of wheat, oats, barley, and also potatoes, in this country; potatoes might offer a difficulty, but there would not be the slightest trouble in storing, say, a year's supply of wheat or of the other cereals for humans and animals. It is quite impossible for this country ever to grow the food that is necessary to feed the population which is at present in it. Therefore we should keep the sources of supply from abroad open and have a sufficiency of cruisers and flying-boats to protect our Mercantile Marine. We always have to remember that we have meteorological conditions to contend against; I believe they have produced a wheat which will grow in a very dry climate, but I do not think they have ever produced one which will grow in a damp climate.

CAPTAIN BASIL HALL, R.N.: I would like to ask the Lecturer whether he has considered the possibility of storing canned food. In a letter in *The Times* last month, Mr. R. J. Cox said there are eighty canneries now operating in England and Scotland, and, geographically separated as they are, they could well provide a reserve of canned foodstuffs free from the danger of contamination, and thereby add another line to our defence system.

LIEUT.-COMMANDER A. FEARN, R.N.: Arising out of what the last speaker said, I should like to ask the Lecturer, as this whole problem of food supply seems to be so very much bound up with the question of nutrition, whether it is not possible for substitutes to be found for wheat. For example, potatoes can be grown almost anywhere; but, again, the question of storing comes in.

If I may take up the cudgels on behalf of the Admiralty on the question of diverting shipping from one port to another, it is well-known that all these various ports are highly specialized for dealing with various cargoes. If, for example, you have a cargo of 6,000 tons of pit-props arriving from a Scandinavian port and they are required at Cardiff for the coal-mines, it is no good diverting them to London because there is a risk of submarines in the Channel. In the same way, in the case of a ship arriving from the Argentine with meat, it is no good putting that meat into Cardiff if it is required in London, because in war time there would be insufficient rail transport to get it there in time to be of use. The population of London cannot eat pit-props.

ENGINEER REAR-ADMIRAL HEFFORD: There is one point I wish particularly to make, and that is about the submarine menace, which is being pooh-poohed in certain quarters. We have to bear in mind that when the late war started Germany had only twenty-seven submarines. During the War she went on building them as fast as she could, and we went on sinking them. Until 1918 she was gaining on

us. At the end of the War she had built a total of over three hundred submarines, and we had sunk two hundred. The maximum number she ever had operating at sea was 155. At the end of the War she had 127 still operating, and we only got the upper hand of them when we had the combined forces of the whole civilized world on our side.

A lot of nonsense is being talked by politicians and by writers of War books about the way in which they "forced the Admiralty to undertake convoying." Convoy has been in use for centuries. The Admiralty knew more about it than anybody else; but in 1915–16 they were not in a position to employ "convoy" because of the lack of adequate escort; and it was not until the United States came in, in May, 1917, and put at our disposal sufficient cruisers and destroyers that the Admiralty were able to institute it.

The submarine is still an enormous menace. There are three or four nations each of whom is in a position to put over a hundred submarines to sea at a few hours' notice. The submarine nowadays is not an experimental thing as it was in 1914; it is an established weapon of war, ready for immediate use, whereas all our defensive or counter measures are in abeyance or disposed of, and they will take not weeks but months to reach real efficiency. We are in the position that we are absolutely dependent on overseas supplies. Suggestions are sometimes made in the papers that aircraft are superseding ships; but when it comes to a question of carrying weights, that is an utter impossibility. In *Whitaker's Almanac* the statistics given show that all the aircraft in the world carried amongst them in twelve months a matter of 1,500,000 passengers and 20,000 tons of cargo—the equivalent to a dead-weight load of 100,000 tons in one *year*. Great Britain, in order to keep going, requires over 1,000,000 tons of cargo a week.

There is only one solution to this problem, and that is the proper storing of adequate supplies to enable us to withstand a maritime siege.

THE LECTURER:

I will say nothing on the question of the Mercantile Marine, because I think that has been sufficiently dealt with this afternoon.

Admiral Thursfield questioned my suggestion that Germany might possibly have defeated us by cornering the stocks of wheat in the Argentine, and he maintained that even if they had done so it would not have mattered because the wheat would still have come to us. He raises a very difficult question there, but I would like to know, assuming that Germany had cornered the wheat, how we would have been able to get possession of it without declaring war on the Argentine.

His other point is a much more serious one, namely, that the submarine is not so dangerous now as it was during the late war. I am delighted to hear that anyone with the experience of Admiral Thursfield should hold that view; it is encouraging, and I only hope that it can be proved and that the public can realize it, because after all one of the great dangers which this country has to fear in time of war is public panic, and anything which will allay that danger is all to the good. Apart from that, I cannot quite believe that the submarine has lost its danger. I cannot believe that invention ended in 1918. I cannot believe that the people who were responsible for developing the capabilities of the submarine as it was then, or the people who were responsible for bringing about the counter-action to them, have stood still ever since. I am afraid we may find that the submarine is still a very grave danger. However, that is one of the things that will not be proved until the next war comes.

with the technical apparatus we had at our disposal then. In this respect I presume we should start the next war, not where we started the last one, but at least where we left off, if not further on.

All the remarks we have heard this afternoon emphasize the enormous importance to this country of the Merchant Navy, of its well-being, and of its correct organization and handling. I would suggest that the inference is the great desirability of removing such control as the Government exercises over it from a subordinate section of a Department burdened with many other duties—the Board of Trade—and creating a Ministry of Shipping. In France, which is not nearly so dependent on the welfare of its Merchant Navy as this country is, they have a Minister of the Mercantile Marine. If any country in the world needs such a Department of Government surely it is this country.

CAPTAIN SIR DAVID WILSON BARKER, R.N.R.: I should like to emphasize what the Lecturer has said about food being the basis of the defence of this country. We should have a proper storage of wheat, oats, barley, and also potatoes, in this country; potatoes might offer a difficulty, but there would not be the slightest trouble in storing, say, a year's supply of wheat or of the other cereals for humans and animals. It is quite impossible for this country ever to grow the food that is necessary to feed the population which is at present in it. Therefore we should keep the sources of supply from abroad open and have a sufficiency of cruisers and flying-boats to protect our Mercantile Marine. We always have to remember that we have meteorological conditions to contend against; I believe they have produced a wheat which will grow in a very dry climate, but I do not think they have ever produced one which will grow in a damp climate.

CAPTAIN BASIL HALL, R.N.: I would like to ask the Lecturer whether he has considered the possibility of storing canned food. In a letter in *The Times* last month, Mr. R. J. Cox said there are eighty canneries now operating in England and Scotland, and, geographically separated as they are, they could well provide a reserve of canned foodstuffs free from the danger of contamination, and thereby add another line to our defence system.

LIEUT.-COMMANDER A. FEARN, R.N.: Arising out of what the last speaker said, I should like to ask the Lecturer, as this whole problem of food supply seems to be so very much bound up with the question of nutrition, whether it is not possible for substitutes to be found for wheat. For example, potatoes can be grown almost anywhere; but, again, the question of storing comes in.

If I may take up the cudgels on behalf of the Admiralty on the question of diverting shipping from one port to another, it is well-known that all these various ports are highly specialized for dealing with various cargoes. If, for example, you have a cargo of 6,000 tons of pit-props arriving from a Scandinavian port and they are required at Cardiff for the coal-mines, it is no good diverting them to London because there is a risk of submarines in the Channel. In the same way, in the case of a ship arriving from the Argentine with meat, it is no good putting that meat into Cardiff if it is required in London, because in war time there would be insufficient rail transport to get it there in time to be of use. The population of London cannot eat pit-props.

ENGINEER REAR-ADMIRAL HEFFORD: There is one point I wish particularly to make, and that is about the submarine menace, which is being pooh-poohed in certain quarters. We have to bear in mind that when the late war started Germany had only twenty-seven submarines. During the War she went on building them as fast as she could, and we went on sinking them. Until 1918 she was gaining on

us. At the end of the War she had built a total of over three hundred submarines, and we had sunk two hundred. The maximum number she ever had operating at sea was 155. At the end of the War she had 127 still operating, and we only got the upper hand of them when we had the combined forces of the whole civilized world on our side.

A lot of nonsense is being talked by politicians and by writers of War books about the way in which they "forced the Admiralty to undertake convoying." Convoy has been in use for centuries. The Admiralty knew more about it than anybody else; but in 1915–16 they were not in a position to employ "convoy" because of the lack of adequate escort; and it was not until the United States came in, in May, 1917, and put at our disposal sufficient cruisers and destroyers that the Admiralty were able to institute it.

The submarine is still an enormous menace. There are three or four nations each of whom is in a position to put over a hundred submarines to sea at a few hours' notice. The submarine nowadays is not an experimental thing as it was in 1914; it is an established weapon of war, ready for immediate use, whereas all our defensive or counter measures are in abeyance or disposed of, and they will take not weeks but months to reach real efficiency. We are in the position that we are absolutely dependent on overseas supplies. Suggestions are sometimes made in the papers that aircraft are superseding ships; but when it comes to a question of carrying weights, that is an utter impossibility. In *Whitaker's Almanac* the statistics given show that all the aircraft in the world carried amongst them in twelve months a matter of 1,500,000 passengers and 20,000 tons of cargo—the equivalent to a dead-weight load of 100,000 tons in one *year*. Great Britain, in order to keep going, requires over 1,000,000 tons of cargo a week.

There is only one solution to this problem, and that is the proper storing of adequate supplies to enable us to withstand a maritime siege.

THE LECTURER:

I will say nothing on the question of the Mercantile Marine, because I think that has been sufficiently dealt with this afternoon.

Admiral Thursfield questioned my suggestion that Germany might possibly have defeated us by cornering the stocks of wheat in the Argentine, and he maintained that even if they had done so it would not have mattered because the wheat would still have come to us. He raises a very difficult question there, but I would like to know, assuming that Germany had cornered the wheat, how we would have been able to get possession of it without declaring war on the Argentine.

His other point is a much more serious one, namely, that the submarine is not so dangerous now as it was during the late war. I am delighted to hear that anyone with the experience of Admiral Thursfield should hold that view; it is encouraging, and I only hope that it can be proved and that the public can realize it, because after all one of the great dangers which this country has to fear in time of war is public panic, and anything which will allay that danger is all to the good. Apart from that, I cannot quite believe that the submarine has lost its danger. I cannot believe that invention ended in 1918. I cannot believe that the people who were responsible for developing the capabilities of the submarine as it was then, or the people who were responsible for bringing about the counter-action to them, have stood still ever since. I am afraid we may find that the submarine is still a very grave danger. However, that is one of the things that will not be proved until the next war comes.

Captain Basil Hall raised the point of the possibility of storing other kinds of food than wheat. I think Mr. Cox's suggestion is a very excellent one. The canning industry is growing and developing. Some canned foods represent articles of first-class quality, and articles which take up very little room, and which can be stored for an indefinite period of time. Apart from canned foods I do not know what else there is that you can hold for a long time, except other cereals, and you cannot hold cereals in this country for any length of time without going to very considerable expense. Potatoes, of course, unless they are treated and turned into farina, cannot be kept for more than twelve months.

The last speaker rather holds the same view as I do with regard to the potential dangers of submarines.

THE CHAIRMAN:

We have had a very interesting paper and discussion. The fact that the discussion has covered so much ground shows how many issues and considerations there are involved in this very large question of food supply in time of war.

There are two small matters which I should like to mention. One concerns the census of horses. The War Office is often unjustly blamed, but they are not to be blamed in regard to this question of the census of horses, because in 1934, having found out that there had not been a census of horses taken for ten years, we asked all the other Government Departments whether they would undertake it, and none would. We therefore had to undertake it ourselves, and I have very great pleasure in handing to Sir Herbert the report of the census for 1934. In another mobilization the number of heavy draft horses which the Army is likely to want is almost negligible, as those units which used to require heavy draft horses have all been mechanized.

A much more serious aspect will be the impressment of vehicles. It is evident that the War Office cannot maintain in peace time a fraction of the vehicles which they want to use in war time, and the provisions of the Army Act, which give the War Office power to impress vehicles when a state of emergency is announced will be used very freely to impress these vehicles. A scheme exists by which a great many vehicles of 30 cwt. and 3-tons load carrying capacity will find themselves impressed on the outbreak of war.

Besides the protection of food there is the question of its distribution. However successfully you may collect your foodstuffs in areas, you want a well-defined organization which is going to distribute those foodstuffs to other areas and in small enough quantities for consumption. I only hope that a matter like that will be obvious to the members of the Government who are considering this question.

The final thing I want to emphasize is the vital importance of this question which has been put before us this afternoon. In talking to soldiers it is simple to explain the matter; if any military commander was to undertake a military operation without having taken all reasonable and necessary precautions to ensure that his force was going to be properly maintained not only in petrol and in munitions but also in food, then he would be asking for trouble, and he would be certain to get it. If that applies to an army, then a nation which has not taken similar precautions is asking for greater trouble still; in fact, one can hardly conceive to what length that trouble could go.

The customary votes of thanks to the Lecturer and Chairman were carried by acclamation.

THE ITALO-ABYSSINIAN CAMPAIGN, 1935-36

By Lieut.-Colonel A. C. Arnold, C.B.E., M.C.

On Wednesday, December 9th, 1936, at 3 p.m.

Major-General R. H. Haining, C.B., D.S.O., in the Chair.

The Chairman, in introducing the Lecturer, said that Colonel Arnold had made a particular study of the Italo-Abyssinian Campaign, not only when it was in progress but also of all the conditions and preparations that led up to it, and the varying factors which brought about its inception.

As a soldier he would speak, of course, from a soldier's point of view, looking rather to the strategy which enabled the war to be concluded, than to the policy which brought it about, except in so far as he might have to refer to it to elucidate anything of strategic note.

Colonel Arnold knew Italy and the Italians, and he was an enthusiast on his subject.

LECTURE

BEFORE I begin this lecture I should like to say that I shall deal with the subject, purely and simply from the point of view of a soldier endeavouring, within the limits of the information which has so far become available, to give a straightforward and unbiased account of this war, and at the end I shall endeavour to draw certain deductions and lessons. I shall avoid giving any opinion on the moral or political rights or wrongs in the Italo-Ethiopian quarrel.

CAUSES OF THE WAR

Before dealing with the war itself it is necessary to try and understand its causes. To do this I must take you back into history, since the main causes are historical, psychological, and economic. Italy is a young nation, which arrived late in the scramble for colonies in Africa. When she did arrive she entered the somewhat restricted field with zest, and after a certain measure of success her efforts ended disastrously on the field of Adua in February, 1896. The defeat of Adua left a deep scar. Not only was it the end of Italy's colonial ambitions for a decade and a half, but it left behind a sense of bitter shame in that a white European country had suffered a crushing defeat

at the hands of a semi-civilized coloured race and had not had the will-power, perseverance or moral courage to return and bring the war to a successful conclusion. By 1911, however, Italian imperialism had so far recovered itself that it was decided to try again, hence the Libyan Campaign of 1911. Questions of colonial expansion also figured prominently in the bargain known as the Treaty of London, by which Italy entered the war on the Allied side in 1915. At the conclusion of the Great War, Italian colonial aspirations were left unsatisfied and, from the Italian point of view, the French and British were guilty of going back on their bargain. This left a feeling of dissatisfaction and bitterness and a determination to achieve colonial expansion by their own action should opportunity offer. In 1923, Fascism came into power and Signor Mussolini began the systematic regeneration of the Italian people. As you know, he worked wonders internally and the Italian quickly lost the inferiority complex under which he had laboured for some decades and regained his self assurance. Externally, however, none of the other big Powers were as yet prepared to regard the Italians with the respect due to a Great Power. This rankled, and as Italy continued to grow in strength so the desire increased to show the world that she was, in fact, now a first class Power.

In 1931, the financial crisis brought home to the Italians with a shock how utterly dependent they were on other nations for their raw materials, and as a natural corollary, in their eyes, how great was the need for good colonies. By 1932, therefore, Italy was in the frame of mind to show the world that she was a first class Power and was eager to expand colonially with a view to gaining a measure of self sufficiency in raw materials. It was in 1932 that Signor Mussolini's thoughts seemed to have first begun to turn seriously towards Ethiopia.(1) Here was a country reported to be fabulously rich in raw materials of all kinds; a country with whom Italy had a long account to settle; and a country which by its slack administration constantly gave its neighbours, of whom the Italians were one, serious cause for complaint. It was a country moreover which separated two existing Italian colonies and whose intransigent attitude made collaboration between these colonies difficult. In 1932 and 1933 much preliminary planning was done and by 1933 Signor Mussolini seems to have definitely made up his mind that Italy's colonial needs must be satisfied at Ethopian expense, and at a date not later than 1936. It was at first hoped that an opportunity would occur either as the result of some revolt amongst the Rases which would call for Italian intervention, or through some

(1) See Map 1.

aggressive act on the part of the Ethiopians which would place the Italians in the position of victims and permit a legitimate counter-offensive. In 1934 definite plans for such a defensive counter-offensive were worked out with the collaboration of the Chiefs of Staff of the fighting Services, and administrative preparations in the shape of rail and road developments were set in hand. The exact reason why Signor Mussolini selected 1936 as the latest date for a reckoning with Ethopia is not clear, but I suggest that three reasons were contributory: firstly, the revival of Germany with her colonial ambitions warned Signor Mussolini that he might not be the only competitor; secondly, the rapid development—material, moral, and physical—of the Italian nation was due to reach its zenith about 1935, and this was obviously the moment for action before enthusiasm waned; also, possibly, increasing economic difficulties on the home front may have indicated that an external diversion would soon be desirable. By the end of 1934, from purely military indications in both the Italian colonies, the War Office became convinced that the Italians were planning operations against Ethiopia, but politically it was difficult to believe that the Italians meant to push matters to a crisis since Ethiopia and the three limitrophe states, Great Britain, France and Italy, were bound together by a number of treaties, pacts, and arbitration agreements. It was not until late in April, 1935, that the Italians really put their cards on the table, by which time Italy was so deeply committed that it was too late to draw back, even had she wished to do so.

But to return to the narrative, on 5th December, 1934, a serious affray took place at Wal Wal (1) between Italian troops and the Ethiopian escort to the British-Ethiopian Boundary Commission, which gave the Italians an excellent opportunity. No one will ever know who really fired the first shot at Wal Wal, but it is certain that the local Italian Commander was fully ready for a fight. Tanks and aeroplanes were in action within a few minutes of the battle opening, whereas, theoretically, there were none within close call. Again, it is not clear to what extent the affair was the responsibility of Captain Cimmaruta, the Italian Commander on the spot, or of higher authority, but there is reason to believe the former. Personally, I believe that Captain Cimmaruta was actually responsible for the fight, but that he was working on a generally aggressive directive from above. When the news reached Rome, Signor Mussolini was faced with having to disown Captain Cimmaruta's action or else to support him. He selected the latter alternative and made demands for reparations which were sufficiently severe to ensure a long period of negotiation. During this

(1) See Map I.

period he developed his opportunity. His instructions to General de Bono, who was sent out as Governor-General on 7th January, 1935, are interesting and read as follows :—" You leave with an olive branch in your pocket. We will see how the Wal Wal affair develops. If it suits us to accept conditions arrived at by arbitration it will be your task to announce your appointment to the Emperor, telling him that you have been sent out to square up misunderstandings and to collaborate in restoring good relations between our two States. At the same time you must continue your preparations, taking into consideration the case that is most difficult and disadvantageous for us. If no solution of the incident is reached, or one which is not satisfactory to us, we will pursue events exclusively according to our own point of view." General de Bono on arrival in Eritrea at once ordered the mobilization of the Colonial Army and set in train intensive administrative preparations for the reception of an expeditionary force and for improving existing communications, etc. Signor Mussolini meanwhile had succeeded in obtaining from M. Laval what he apparently understood to be the promise of a free hand to do what he liked in Abyssinia in exchange for certain agreements in Europe.

Early in February, 1935, Signor Mussolini believed that the Emperor anticipated taking action against Somalia and decided to dispatch the first Metropolitan divisions to East Africa to counter this threat. By the end of February, however, Signor Mussolini realized that the Emperor probably would not take the initiative, so he wrote to General de Bono : " In case the Negus does not intend to attack, we ourselves must take the initiative. That cannot be done unless you have at your disposal, in addition to the blacks, at least 100,000 whites, a number which must rapidly rise to 200,000," and again on 8th March : " It is my profound conviction that, we having to take the initiative in the operations at the end of October or end of September, you must have a total force of 300,000 men . . . without taking this force to keep up the pressure of offensive penetration, the operations will not have the energetic rhythm that we desire. . . . Also in view of possible international complications it is well to hasten. For want of a few thousand men we lost Adua ! I will never commit that error. I will err on the side of too many rather than too few . . . it is essential not to postpone the date of October that we have settled on for the commencement of operations." Thus we see that by the middle of March, 1935, the project had changed from a defensive counter-offensive to a deliberately planned offensive which was to take place as soon as the rains ceased. From this moment Signor Mussolini had no intention of accepting a settlement, and every move was made with the idea of gaining time for preparations and of keeping the Ethopians quiet

until the Italians were ready to strike. If proof of this were needed, it is only necessary to quote two more letters of Signor Mussolini. In one dated 18th May he wrote: "There is talk of a compromise . . . I have let it be understood that we will under no circumstances turn back," and again on 26th June when informing General de Bono of Mr. Eden's visit and proposals he wrote: "You can imagine my reply . . . the English attitude is helping rather than harming us."

By the end of September, 1935, it was considered that, in view of the European situation, it was essential that a start should be made even if preparations were not entirely complete, and on 29th September the advance was ordered for 3rd October "without a declaration of war." Meanwhile the Ethiopians who had no intention whatever of risking a single-handed quarrel with Italy had been carrying on negotiations and offering various concessions through the League of

MAP I

Nations and it was not until 26th July that, realizing the danger, the Emperor ordered general mobilization.

THE OPERATIONS

So much for the causes and history of the period immediately preceding the outbreak of war. Now let us turn to the operations themselves. The Italian plan was for General Graziani in Somalia to contain the largest possible numbers of Ethiopian troops while General de Bono in the North advanced rapidly and occupied that portion of Tigre which the Italians had held prior to 1896. From a purely military point of view a quick advance in the South had certain advantages and would probably have forced a decisive battle sooner but from the point of view of national morale the recapture of Adua was all important. The Ethiopians, on the other hand, being caught before their concentration was complete could only withdraw from their outlying provinces and hope either for an opportunity of developing a counter-offensive against the Italian lines of communication when they became suitably attenuated, or for League action to take effect.

The campaign itself falls into four distinct phases. The first is from the beginning of the campaign until the middle of November when the Italians held the initiative. The initial advance on the Northern front effected the occupation of Tigre up to the line Adigrat—Adua—Axum.(1). This was followed by a second advance to Macalle and the line of the Tacazze a month later. General de Bono was not really ready from the administrative point of view for this second bound but was ordered to undertake it by Signor Mussolini in the following directive: "There will not be complications in Europe before the English elections fixed for the middle of November. By that date all Tigre up to Macalle and beyond must be ours." Actually both advances were made with very little opposition from the enemy though in face of great natural difficulties. On the Southern front General Graziani made several small local advances, the most important of which was the capture of Gorahai, but after the check at Ananle on 11th November he relapsed into inaction for two months. It may be argued that this was in accordance with his defensive role but was probably even more due to the fact that at Ananle the Italians lost three light tanks to the Ethiopians which for the time being had a bad effect on the Somali native troops who had hitherto regarded the tanks as infallible, while having the opposite effect on the Ethiopians.

---

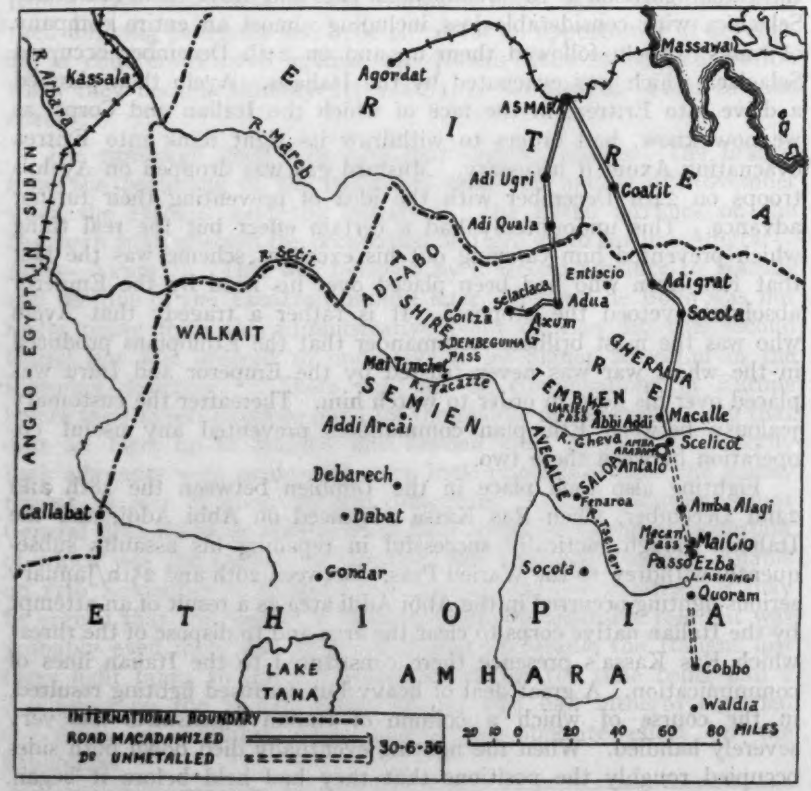
(1) See Map II.

The second phase lasted from the middle of November to the middle of January. During this period, for a variety of causes, the initiative passed to the Ethiopians and the Italians found themselves everywhere on the defensive. On the Northern front General de Bono's rapid advance to Macalle and the Tacazze had far outstripped the speed with which he could make roads and he found himself having to supply large masses of men over a most difficult terrain entirely unprovided with roads and with insufficient transport. Added to this, the Tacazze River which had hitherto only been passable at certain known crossings dropped and ceased to be a military obstacle. The much delayed Ethiopian mobilization and concentration had been completed and their forces were beginning to infiltrate into the Tembien and Shire. The first Ethiopian success occurred on 15th December when Dedjazmatch Ayelu suddenly forded the river near Mai Timchet and surprised the Italian garrison at the Dembeguina pass and drove them back onto Selaclaca with considerable loss, including almost an entire company of tanks. Ayelu followed them up and on 24th December occupied Selaclaca which was evacuated by the Italians. Ayelu then planned a drive into Eritrea, in the face of which the Italian 2nd Corps, as we now know, had orders to withdraw its right flank into Eritrea evacuating Axum if necessary. Mustard gas was dropped on Ayelu's troops on 24th December with the idea of preventing their further advance. This undoubtedly had a certain effect but the real thing which prevented him carrying out his excellent scheme was the fact that Ras Imru who had been placed over his head by the Emperor absolutely vetoed the proposal. It is rather a tragedy that Ayelu who was the most brilliant commander that the Ethiopians produced in the whole war was never trusted by the Emperor and Imru was placed over his head in order to watch him. Thereafter the customary jealousy between Ethiopian commanders prevented any useful co-operation between these two.

Fighting also took place in the Tembien between the 18th and 22nd December, when Ras Kassa advanced on Abbi Addi, and the Italians though tactically successful in repelling his assaults subsequently withdrew to the Warieu Pass. Between 20th and 25th January serious fighting occurred in the Abbi Addi area as a result of an attempt by the Italian native corps to clear the area and to dispose of the threat which Ras Kassa's presence there constituted to the Italian lines of communication. A great deal of heavy but confused fighting resulted, in the course of which a column of Italian Blackshirts was very severely handled. When the fighting eventually died down both sides occupied roughly the positions that they had held before it began. Both sides subsequently claimed a victory: the Italians on the grounds

that Ras Kassa's projected offensive against their lines of communication was nipped in the bud, and the Ethiopians on the grounds that the Italians had failed to dislodge them from the Tembien. Actually, in the course of both the Dembeguina and the Abbi Addi fighting, considerable bodies of Italians were cut off and surrounded by the Ethiopians, and in both cases only escaped annihilation because the latter either dispersed to loot or for some other reason failed to push home their advantage. Had the Italians experienced even a minor disaster at this period the whole course of the war might well have been different. As it was, Marshal Badoglio obtained a very good insight into the fighting capabilities of the Ethiopians and he decided that though personally brave they were quite incapable of carrying out concerted plans.

MAP II



By the end of January, therefore, the position of the Italians on

the Northern front was by no means happy. The Ethiopians were well established in the Tembien and prevented the Italians from using the Axum-Macalle road and constituted a permanent threat to the main Italian line of communication Adigrat—Macalle. Meanwhile in November, Signor Mussolini, having decided that the military situation called for the best military commander that Italy could produce, replaced General de Bono, who prior to this appointment had been away from the Army for twelve years, by Marshal Badoglio. The latter, on arrival, at once set about a thorough reorganization of the whole of the administrative arrangements—a task which taxed his energies and resources to the utmost. On the Southern front, General Graziani made no move until 13th January, principally owing to the fact that he had some trouble with his native troops which necessitated transferring some of them to Libya. Meanwhile the Ethiopian armies had completed their concentration in the North: Ras Mouloughetа's army astride the "Imperial road," Ras Kassa and Ras Seyum in the Tembien and Ras Imru and Dedjazmatch Ayelu in Shire.

On the Southern front their main forces were concentrated in the Jijiga area under Ras Nacibou while other forces under Ras Dasta moved down from Sidamo towards Graziani's left flank about Dolo. In order to relieve the pressure on the northern and home fronts and to dispose of the threat to his own left flank, Graziani on 13th January attacked Dasta in three columns with considerable mechanized forces and after defeating him heavily, occupied Nighelle and drove the remnants of his army back to Wadera. This easy victory was partly due to the fact that the morale of Dasta's army had been sapped through gross mal-administration and partly to the fact that Dasta's forces foolishly tried to stand up to tanks in ideal tank country, with disastrous results. Graziani's success not only had an excellent moral effect in Rome and on the Northern armies but, since it opened up a possible line of advance on Addis via Allata and the Lakes, caused considerable alarm in the capital, resulting in a number of troops intended for the Northern front being diverted into Sidamo.

The third phase opened early in February when Marshal Badoglio had so far put his administrative house in order that he felt in a position to regain the initiative. The home Government was being subjected to heavy pressure from the League through the effect of sanctions, the Italians held comparatively little with which to bargain and the rains were already within sight when the season for offensive campaigning must cease. There was, therefore, a powerful incentive to vigorous action, which was helped by the fact that the Ethiopians

had concentrated large forces within striking distance. Marshal Badoglio decided to strike first at Ras Mouloughetа's army which was occupying a strong position on and forward of the Amba Aradam massif. He therefore concentrated in and forward of Macalle two Corps, the First and Third, a total of seven divisions and a mass of eighty-one pieces of medium artillery. This I think you will agree was a fine administrative achievement as these large forces not only had to be concentrated but also maintained on the single road Adigrat—Macalle while in addition reserves of supplies and of heavy ammunition had to be built up. On the 11th February Marshal Badoglio launched his attack under cover of a heavy artillery bombardment. By the evening of the 12th the Italians had captured the Ethiopian position which protected the approaches to the Amba Aradam massif. They then paused for two days while the heavy artillery moved forward and attacked again on the 15th, the Amba being finally captured in the evening by the *Alpini* who stormed the crest from the rear. On the 13th a counter attack round the Italian left flank led by Bitwoded Maconnen actually succeeded in entering Macalle, but Maconnen himself became a casualty and his forces thereupon dispersed. Had he been able to maintain himself there for even quite a short time the position of the Italians would have been precarious. On the Italian right flank, Ras Kassa and Seyum though within sound and almost within sight of the battle made no move, yet it is estimated that they could have intervened with large forces by the second day, and in fact had instructions from the Emperor to do so. The remnants of Ras Mouloughetа's army retired in disorder towards Dessye and were subjected to continuous and concentrated air attack including a large proportion of gas. The final straw was when the Raia and Azebu Gallas, who had been in touch with the Italians for some months, rose and attacked the fugitives, and from this moment the retreat became a complete rout, and all hope of rallying the fugitives was lost. Ras Mouloughetа himself was killed by these Gallas.

Having defeated Ras Mouloughetа, Marshal Badoglio next turned his attention to Ras Kassa and Seyum. He diverted the 3rd Corps from the pursuit of Ras Mouloughetа westwards along the South bank of the River Gheva afterwards turning North and crossing the river. This was a very fine performance as it entailed feeding the whole corps by air for three days. At the same time the Eritrean Corps was set in motion from the North-East so that the two Rases looked like being caught between the two. Actually after one day of somewhat confused fighting they managed to escape by night past the right flank of the 3rd Corps, and it is probable that the Italians meant them to do so. Their retreating columns were discovered by the Italian air forces

the next morning and were subjected to heavy air attack with both bombs and gas which very soon turned their retreat into a rout, the forces breaking up into small bodies or dispersing towards their own districts.

Marshal Badoglio's third blow was directed at Dejazmatch Ayelu and Ras Imru in Shire. His plan of attack here was to advance with the 2nd Corps westwards in the direction of Selaclaca—Coitza while the newly formed 4th Corps made a big detour and came down through the waterless country in Northern Shire onto the Ethiopian left flank. The attack opened on the 26th February and the 2nd Corps was subjected to very heavy opposition and made little progress during the first three days. On the fourth day, however, the advance of the 4th Corps, which after leaving Eritrea had been entirely supplied and watered by air, made itself felt and the Ethiopian armies retreated towards the crossing of the Tacazze at Mai Timchet. Again the Italian air force intervened and subjected the fugitives to air and gas attack, especially at the crossing. After crossing the river, Ayelu's men, who were close to their home district, immediately dispersed whilst Imru's men broke up into small bodies and continued their headlong flight southwards harried by certain sections of the local population. Thus in the space of three weeks Marshal Badoglio had destroyed the three major Ethiopian armies on the Northern front, had regained the initiative, and had opened up the way to Addis Ababa. He now paused to appreciate the situation. His intelligence service which was very good informed him accurately of the complete state of disruption of the three defeated Northern armies. He also knew that there was a serious rebellion in Gojjam for the suppression of which considerable forces had been diverted and that the only remaining enemy force between him and Addis Ababa was the reserve army including the Imperial Guard which was under the personal command of the Emperor in the Quoram—Dessye area. The Marshal therefore decided that if he could defeat this army there was a chance of being able to reach Addis Ababa and base himself on the railway before active operations were stopped by the rains, an event which would normally occur in about ten weeks' time. He realized that if he could not reach Addis Ababa and use the railway, the line which he must hold during the rainy season would be limited by the location of his weatherproof roadhead and could not on reasonable estimates be far south of the Tacazze. He therefore took the bold decision of attempting the occupation of Addis before the rains rendered further movement impossible and with this end in view he ordered a general advance on all fronts. The 1st and Eritrean Corps were directed down the Imperial Road with the task of gaining contact with the Ethiopian reserve army

and bringing it to battle. The 3rd Corps was directed on Socota where it could to a certain degree protect the flank of the 1st Corps, while three new lines of advance were ordered—one from Assab to Sardo in the heart of the Danakil country; one through the Semien via Dabat towards Gondar, and one parallel to the Sudan border with Gondar as its objective. The advance on Sardo was carried out by quite a small body of native troops over a waterless volcanic desert, all supply, evacuation of casualties, etc., being carried out by aircraft which landed near the column. Sardo was occupied on 12th March. The advance through the Semien was carried out by the 2nd Corps and 3rd Eritrean Brigade, its object being to protect the flank of the Gondar column and to prevent Ras Imru's and Ayelu's forces from re-uniting. The advance on Gondar was made by an improvized mechanized column of five hundred vehicles under Signor Starace, the Secretary General of the Fascist Party and now a Lieutenant-General in the Militia. It was a remarkable performance; the column moved through country which was largely trackless and often covered with grass ten feet high, relying on the air for information and local protection. Had the Ethiopians set light to the grass, which was tinder dry, it is more than possible that the whole column would have been annihilated. However they did not do so, and Gondar was occupied on 1st April.

At the same time Marshal Badoglio ordered his Quartermaster-General to collect a large column of motor transport and to hold it in readiness to march on Addis Ababa as soon as he should give the word. The 1st and Eritrean Corps continued their advance southwards with little opposition until they reached the area of the Mecan Pass. Here, on 27th March, the Marshal intercepted a wireless message from the Emperor to the Empress and learnt that the Emperor was assembling his army for attack. The two Corps therefore took up a strong defensive position about Mai Cio. On the morning of 1st April the Ethiopians led by the Imperial Guard attacked with great violence and attacks continued throughout the day. Though at times the situation was anxious, the Italians being well entrenched stood firm and the Ethiopian losses were enormous. In the evening the Italians counter attacked and occupied part of the Ethiopian position, and during the night the Ethiopian army commenced its retreat. The next morning, harassed by the Italian Air Force, the retreat became a rout, and to make matters worse several local tribes attacked the fugitives. With this defeat all hope of organized resistance in the North vanished and after spending a miserable month as a fugitive the Emperor left the country. The reasons which decided the Emperor to risk all at Mai Cio have not yet been made known. He seems to have suddenly reverted to the primitive attack methods of his ancestors, a state of mind engendered by extreme

exhaustion, physical and mental, pressure from his remaining chiefs, and disappointment at receiving a negative answer to a last desperate personal appeal to Great Britain for help.

Marshal Badoglio, directly he had news of the victory at Mai Cio, moved his headquarters by air to Dessye and ordered forward the mechanical transport column which had been collected for the march on Addis. The actual advance on Addis was a very fine example of endurance and of administrative improvisation. It was carried out in two columns. A mechanized column of 1720 vehicles, manned by the 1st Corps, moved via the so-called main road through Debra Brehan, while a lightly equipped Eritrean Brigade moved on foot over the hills by the direct track through Emberta. The former column was followed by the bulk of the Eritrean Corps on foot. The advance began on 23rd April. No enemy resistance was encountered but the mechanized column found that the so-called road was little better than a track without foundations which the effect of the rain, now started, and of Ethiopian demolitions had rendered almost impassable. In many places every vehicle had to be man-handled and in others entirely new diversions had to be cut out of the solid hillside. The Eritrean Dismounted Brigade arrived within sight of Addis Ababa first and it was not until 4th May that the motorized column made contact with them. On the afternoon of 5th May the two columns entered Addis together, the city having been a prey to looting and murder for the previous four days.

Meanwhile on the Southern front, early in March, Ras Nacibou thought, or was told, that it was his duty to produce a diversion. He therefore called for his Turkish advisers Wehib Pasa and Farouk Bey and demanded an "appreciation." The latter advised against an offensive and recommended that he should withdraw to the Harar foothills and there dig in and carry out intensive training, leaving small forces in the low ground to harass the Italians whose already long line of communication would in the event of their trying to advance be considerably lengthened. Nacibou, as usual, ignored their advice and decided to stage an offensive in the direction of Denan where, if successful, his troops were to turn eastwards and take Gorahai from the rear. Again, as usual, much time was wasted in fruitless discussion and it was not until 13th April that Nacibou attacked. Not only were his forces inadequate but General Graziani, who had intercepted all his orders, had received ample warning of his intention and had massed the Libyan Division on his left flank in order to counter the threat. The Ethiopian attack met with a small local success near Dagamodo and was then checked by General Graziani who, on the 15th, passed

to the counter offensive with three columns. The left column consisted of the Libyan Division and a mechanized force for exploitation; the centre column consisted of a native brigade and irregulars under General Frusci; and the right column of Fascist Militia and irregulars under General Agostini. Fierce fighting took place on the front of the Libyan Division during the 16th and 17th, and on the 18th the Ethiopians started to withdraw along the whole front. The Italians followed but the weather had by this time broken, thereby limiting air action, and in spite of several days' fierce fighting, especially on 24th and 25th April, the Ethiopians managed to make good their retreat with their forces still maintaining some sort of cohesion. Daggahbur was occupied on 30th April, Harar on 8th May, and contact with Marshal Badoglio's troops was made by means of the railway on 9th May. So ended organized resistance.

Owing to the very short time which elapsed between the occupation of Addis Ababa and the period of the heaviest rains, the Italian occupation during the period June—September was limited to the railway and to the main roads. During this period they suffered a great deal of annoyance at the hands of the remnants of Ras Nacibou's southern army both along the railway which was cut on several occasions, and at Addis Ababa itself which was actually attacked twice, while in Sidamo General Geloso, who was trying to occupy the province of which he is theoretically Governor, experienced steady opposition from the remnants of Ras Dasta's army. In other places, the country settled down reasonably well and there is now little likelihood that any further organized resistance to Italian occupation will be made. In Western Ethiopia a curious situation existed. When the Emperor left the country the local Gallas decided that they would no longer submit to the Amhara rule and a body of Galla chiefs set up a sort of governing committee which actually applied to the League of Nations for a British Mandate. At the same time certain Amhara chiefs, of whom Ras Imru is the best known, endeavoured to form an Ethiopian Government at Gore. Actually it was the British Consul at Gore, who by his personal influence throughout the rainy season kept the two sides from going for each other. The Italians had made one attempt to occupy by air Nekemti in western Ethiopia before the rains, but the party was massacred soon after landing by a wandering band of Amhara soldiers. Now that the rains are finished, General Graziani is taking the final occupation of the country in hand. Nekemti, Gore, Sayo, Jimma, and Allata have all been occupied by the Italians and the western Gallas have submitted. Ras Imru with a small band of Amharas is fighting both the Gallas and the Italians in the hilly country North-West of Nekemti. In the Chercher and round Addis

Ababa the Italians are completing the final rounding up of the Ethiopian forces which have been causing them such annoyance during the rains. All Ethiopian resistance, however, is now local and temporary and there is little doubt that the Italian military occupation of the whole country will be completed by the end of the present dry season. Whether this will mean the thorough pacification of the country is quite another matter. Personally I feel that complete pacification is likely to take some time.

LESSONS OF THE CAMPAIGN

Now let us see what lessons we can learn, and try to ascertain how, at the cost of only some 4,500 admitted casualties, Italy, contrary to the prognostications of all the Chanceries and General Staffs of Europe, not excluding the Italians themselves, has been able in seven months to conquer an Empire. The first and greatest mistake was, I think, not so much that the capabilities of the Italians were generally underrated but that the cohesion of the Ethiopian Empire was grossly overrated. We now know that the apparently united front presented by the latter was largely a façade, and that behind that façade the bonds were very loose indeed and quite incapable of standing strain. The extent to which Italian propaganda and gold had undermined the loyalty of many of the Ethiopian subject races was also underestimated. Later, when the war was in progress, the failure of sanctions to take early effect and the lack of effective League assistance induced a feeling of despair amongst the Ethiopians: it was the reaction of primitive people let down by methods which they could not understand. When the edifice did start shaking poor communications prevented the Emperor from exerting personal control and a merciless use of the air arm and of gas made the break up complete. Italy being a signatory to the Gas Convention, it had been assumed that she would hesitate to use it.

There are also a certain number of military lessons which it is perhaps worth while noting :—

(i) The Italians are very much more competent in every way than they appear to be to the average Anglo-Saxon observer. The appearance of their troops and equipment is often slovenly by Anglo-Saxon standards, but because a unit appears slovenly it does not mean, as it would with us, that their morale has deteriorated. It is a matter of difference in temperament and different values set to different qualities.

(ii) The Italians made a most thorough and interesting use of the air arm. Apart from the question of supply by air, the air often took the place of ground troops for both protection and in attack when low flying aircraft were used for pro-

viding covering fire instead of artillery. It is important to note that this was done against an enemy possessing no air force, but it is perhaps worthy of study for our own small wars.

(iii) The Italian tank, used as a tank, proved to have many weaknesses. It is essentially an armoured machine-gun carrier.

(iv) The quality of the Italian-Eritrean troops and of their white officers was high. At this moment the expansion of Italy's colonial army in Ethiopia is only what is necessary for pacifying the country, but should Italy ever think fit to build up a really large colonial army there, the morale of that army is likely to be excellent.

(v) The ability to get large quantities of medium artillery forward in mountainous country was unexpected, and it produced excellent results.

(vi) A ruthless and even wasteful use of mechanical transport proved to be economical in the long run. The vehicle wastage over the fair weather roads was enormous but through its liberal use the war finished in one season. Are we not sometimes inclined to be over careful of our material?

(vii) And here I quote Marshal Badoglio's own words: "The war has upset much theoretical data, capacity of roads and tracks, use of mechanical transport, length and speed of marches, needs of the soldier. All this requires re-study in accordance with the underlying conception of making greater demands on all by all. This applies especially to mechanical transport which has now been proved capable of employment under conditions previously considered impossible."

In conclusion I think one must admit that the generalship, ability to make an accurate "appreciation," and the will to take bold decisions on the part of Marshal Badoglio has not been universally appreciated, nor perhaps the power of administrative improvisation or the inherent hardiness of the Italian soldier. In my opinion, history will place Marshal Badoglio amongst the great commanders. It is however worthy of note that few great commanders in history have ever received such wholehearted encouragement and support from their home Government as Marshal Badoglio received from Signor Mussolini.

DISCUSSION

CAPTAIN E. ALTHAM, R.N.: The Lecturer alluded to the success of the Italian air attacks, but ought we not to take into consideration the fact that the Ethiopians had very little experience of aircraft, and, quite apart from their inability to counter

such attacks, took less cover than an enemy who had had dealings with aircraft would have done ? To that extent, were they not rather easy prey to the Italian aircraft ?

The other question I should like to ask the Lecturer is whether it is a fact that the Italians had the greatest difficulty at first in making roads, owing to the local stone being of very little use and disintegrating ? I understand that they actually had to import stone in order to harden the surfaces of certain of their roads.

LIEUT.-COLONEL SAVAGE : Could the Lecturer tell us something about the health of the Italian troops and the native troops, and the medical arrangements ?

LIEUT.-GENERAL O. C. BORRETT : Could the Lecturer give us any idea of the physical effect of the gas used by the Italians, as opposed to the moral effect ?

THE LECTURER :

First I will deal with Captain Altham's questions. Actually the Ethiopians did learn the meaning of taking cover from air attack most extraordinarily quickly, and we have some photographs taken at the time of the original fight at Wal Wal which show that. But I agree that they were " easy money " from the air point of view. On the other hand, I think the Italians used the air on a scale which no one has yet attempted, and, even discounting all the advantages that they had and which others may not have, there may still be something to be learnt from their experience.

The second question was about the stone in the North. During those first few months, when the dry weather was on and Marshal de Bono was trying to maintain his communications, they had tremendous trouble with a dry, friable rock which was pounded into a sort of dust, and which very often lay several inches thick. They had to go on using this appalling road, even at the expense of breaking many of their vehicles, while they laid another macadam one alongside it.

On Colonel Savage's question : according to all official Italian records, and according to the personal reports of eye-witnesses some of whom were anti-Italian, the health both of the Italians themselves and of their native troops was extraordinarily good. Why, I do not know, because their sanitation, by our standards, was simply appalling ; but the Italian peasant soldier in everyday life is not used to the sanitation that we have ; moreover, it is a healthy country. Anyway, the fact remains that the incidence of sickness was extraordinarily low, and compares favourably with that in almost any previous colonial campaign.

As regards General Borrett's question, the physical effect of the gas was the usual one with a gas of a vesicant type ; that is to say, it produced the most appalling blisters. But where, I think, it had most effect was on animals : the majority of the Ethiopian armies consisted of a number of individual soldiers, each with his donkey or mule on which he carried rations. These donkeys and mules ate the grass and it killed them, and it was that which really broke down morale more than anything.

THE CHAIRMAN :

It seems somewhat presumptuous of me to say anything after so comprehensive a lecture ; but I think there are one or two points from which we can draw lessons.

It is perfectly true that, as far as we know, all the staffs did make the prediction of a long war—the Italians among them ; but the situation very definitely altered in 1935 when there was the question of Italy coming up against the League of

Nations and the possible application of sanctions. I was at the Italian manœuvres with Colonel Arnold in 1935, and was told that the Abyssinian war was intended simply to be a colonial war such as we were used to carrying out. I was asked why Italy was not to be allowed to carry on herself with this war in slow time as she wanted to: that was not a matter for the soldier, it was a matter of policy; but it was a fact that directly there was any chance of a limit being put to the project through outside influence, it became of a much more comprehensive character, and it was a fine example of a military campaign carried out on a large scale against time—that is, against the rains. Getting to Addis Ababa and ending the war by the 9th May was, I think, one of the closest things there ever has been, and it does bring out pre-eminently the importance of the administrative side. It brings out, too, how much the Italians had to improvise.

There has been a great tendency in this country to think that the Italian of to-day is still the Italian of Caporetto. Every nation has advanced in military thought, and the Italian, from what one has seen of him, is a very different individual to what he used to be. There is no doubt that his needs and his administrative wants do not demand so extensive an organization as ours do; but still one wonders if the remark of Marshal Badoglio—quoted by the Lecturer—that we must consider whether M.T. has not proved itself capable of employment under conditions previously considered impossible, should apply not only to M.T. but also to soldiers generally, and to the whole armament of war; may we not, in future, have to demand of them a good deal more even than was demanded before, and may we not have to forgo something of our very high standard of luxury which necessitates such huge calls on our administrative services. It was the more simple needs of the Italian which enabled him to improvise so much more easily.

The campaign also teaches us some lessons in regard to the organization of communications. Italian radio co-ordination was extraordinary—over a thousand sets were in use. But, again, I think there is the lesson to be learnt that, if we overdo our communications and overdo our wireless, we tend to eliminate initiative, and you do not want to do away with initiative in a country like that. The real eye-opener was the falsification of the hopes and the failure of all the defensive means, simply and solely because Abyssinia had never moved in thought since 1896 at Adua; she had kept herself free from outside interference, she had not realized what the internal combustion engine, and mechanized development generally, meant, and she imagined, apparently, in that offensive on 30th March, that a primitive, undeveloped and indifferently organized race could attack a highly civilized and developed race standing on the defensive under modern conditions, as she did successfully in 1896.

I think there are a good many lessons which we may get out of this campaign, and they are lessons which may very well be taken to heart. The military conclusion—apart from anything to do with policy—is that Marshal Badoglio's effort was a masterpiece of administrative organization.

The customary votes of thanks to the Lecturer and Chairman were carried by acclamation.

THE ROYAL AIR FORCE

(*Companion articles to this, dealing with the Administration, Organization and Direction of the Royal Navy and of the Army, and with the functions of the Units of the two Services, appeared in the* JOURNALS *for May and August, 1936, respectively.*—EDITOR.)

By F. F. G.

ALTHOUGH the French Army had established a school to study the art of ballooning at the end of the XVIIIth century, it was not until late in the XIXth century that any serious military thought was given in other countries to the science and possibilities of aeronautics. It is generally accepted that the necessary impetus was given by the success attained in the conveyance of letters and passengers across the lines in free balloons during the seige of Paris in 1870–71. As far as this country was concerned, the appreciation of this lesson of the Franco-Prussian War resulted in the establishment at Chatham in 1879 of the Balloon School for the instruction of personnel of the Royal Engineers in military aeronautics. This step marks the genesis of the Royal Air Force.

In 1903 came the successful invention of the aeroplane by the Wright brothers and from that point progress was comparatively rapid, marked by such incidents as the crossing of the Straits of Dover by M. Bleriot in 1909, the use of aeroplanes by the Italians during the Tripoli campaign in 1911, the conversion of the Balloon School to the Air Battalion, R.E., which embraced both lighter-than and heavier-than air craft, until in 1912 approval was given by Royal Warrant for the formation of the Royal Flying Corps. The Admiralty and the War Office had been equally progressive during the period preceding 1912, and there was so much in common between the developments and enthusiasms of both, that the Royal Flying Corps was established as "an aeronautical service for naval and military purposes." The Corps consisted of a Naval Wing, a Military Wing, a Central Flying School, and a Reserve. The Naval Wing and the naval personnel of the Reserve were under the administration of the Admiralty, whilst the remainder of the Corps came under the control of the War Office which also retained control of the Royal Aircraft Factory.

In 1912 there was no question of a third arm separate from the Navy and the Army, and it is doubtful whether even the most enthusiastic

visualized such a trinity, but it cannot be denied that those responsible for the initial establishment of the Royal Flying Corps were, wittingly or unwittingly, grasping the same fundamentals and thinking on the same lines as those who in 1917 brought the Royal Air Force into being and those who after the War fought for its continued existence as a separate Service. The marital bliss of 1912 was, however, short-lived, for in 1914 the Naval Wing became divorced from the Royal Flying Corps and was renamed the Royal Naval Air Service.

Thus, on the outbreak of war in August, 1914, although both the Navy and the Army had their own air services, there was no connecting link or co-ordination other than the normal liaison between two Government Departments. Consequently each air service was developed, expanded, and equipped to meet the requirements of its own Service regardless of the requirements or difficulties of the other. The whole organization of each air service was entirely separate from the other, although there was still much that was common to the two, such as the training of pilots and maintenance personnel, the development of aeronautical science and the supply of equipment. It was the anomalies arising from a lack of co-ordination which in 1916 forced the first step towards a reversion to the centralization achieved in 1912. The Joint War Air Committee under Lord Derby which the Government set up in February, 1916, was charged with the problems affecting the two air services. It failed, however, owing to the lack of executive power, as did the First Air Board under Lord Curzon which succeeded it. The Second Air Board under Lord Cowdray, however, was given the definite responsibility for the design and allocation of aircraft, with the result that an immediate improvement in the position was effected. At the same time, an independent committee under Lieut.-General Smuts was formed to inquire into the whole question of the relationship between the two air services in the furtherance of the war effort of the country in general. As a result of the experience and activities of the Air Boards and more particularly of the report and recommendations of the Smuts Committee, the Government decided that complete centralization of administrative control was essential. Accordingly the formation of a Royal Air Force, distinct from both the Army and the Navy, was authorized by the Air Force (Constitution) Act, 1917, and on 1st April, 1918, the Royal Flying Corps and the Royal Naval Air Service ceased to exist.

THE AIR COUNCIL

Following the precedent of the Board of Admiralty and the Army Council, the Air Force (Constitution) Act, 1917, authorized the establishment of an Air Council " consisting of one of His Majesty's Principal

Secretaries of State, who shall be President of the Air Council, and of the members, who shall be appointed in such manner and subject to such provisions as His Majesty may, by Order in Council, direct." The necessary Order in Council was made in December, 1917, establishing the Air Council with effect from 3rd January, 1918.

By provision made in 1917, the Air Board, which had continued to be the co-ordinating authority, ceased to exist from that date. On initial formation the Council consisted of :—

The Secretary of State for the Royal Air Force.
The Parliamentary Under-Secretary of State.
The Chief of the Air Staff.
The Master-General of Personnel.
The Controller-General of Equipment.
The Inspector-General of the Royal Air Force.
The Director-General of Aircraft Production.
The Administrator of Works and Buildings.
The Secretary.

Various changes were carried out from time to time both as to the distribution of duties and as to the number of members on the Council (at one time there were eleven members) until in 1924 we find it constituted as shown in Table I.

Constituted in this manner (with occasional minor alterations) the Air Council functioned adequately for a small force, but with the advent of the expansion programmes it became clear that the departmental duties of the Chief of the Air Staff and of the Air Member for Supply and Research, particularly the former, would be too great. The Air Council was at this stage called upon not only to form and control a force far greater than had hitherto been visualized as a peace requirement, but it had to carry the extra responsibilities consequent upon an entirely changed outlook in this country as regards air forces coupled with a rapid deterioration in the international situation. It was decided to reconstitute the Council by the introduction of an additional member called the Air Member for Supply and Organization. The C.A.S. was thus relieved of departmental responsibility for organization and works, whilst the A.M.S.R. relinquished supplies and became the Air Member for Research and Development. At the same time various departmental reforms were carried out in order to meet the increased commitments which now faced the Council.

The present constitution of the Air Council and the duties of each member are as shown in Table II.

TABLE I.

AIR COUNCIL AND STAFF IN 1924.

Secretary of State for Air.

Under-Secretary of State for Air.	Chief of the Air Staff.	Air Member for Personnel.	Air Member for Supply and Research.	Secretary of the Air Ministry.
Director of Civil Aviation.	Director of Operations and Intelligence.	Deputy Director of Personnel.	Director of Research.	Secretariat and Finance Divisions.
	Director of Organization and Staff Duties.	Director of Training.	Deputy Director of Aeronautical Inspection.	Director of Accounts.
	Director of Works and Buildings.	Director of R.A.F. Medical Services	Director of Equipment.	Director of Contracts.
		Chaplains Branch.		Director of Lands.
				Director of Meteorological Office.

TABLE II.

AIR COUNCIL AND STAFF IN 1937.

Secretary of State for Air.

Under-Secretary of State for Air.	Chief of the Air Staff.	Air Member for Personnel.	Air Member for Research and Development.	Air Member for Supply and Organization.	Secretary of the Air Ministry.
	Inspector - General of the R.A.F.	Director of Postings.	Director of Technical Development.	Director of Organization.	Secretariat and Finance Divisions.
	Director of Operations and Intelligence.	Director of Personal Services.	Director of Scientific Research.	Director of Equipment.	Director of Accounts.
	Director of Staff Duties.	Director of Training.	Director of Aeronautical Inspection.	Director of Works and Buildings.	Director of Contracts.
	Director of Signals.	Director of R.A.F. Medical Services.	Deputy Director of Repair and Maintenance.	Director of Aeronautical Production.	Director of the Meteorological Office.
		Director of Education.			
		Chaplains Branch.			

Note.—The Director-General of Civil Aviation is not on the Air Council, but has the status of a Member in that he is directly responsible to the Secretary of State.

THE FUNCTION OF AIR FORCE UNITS

The recent White Paper (Cmd. 5107) entitled "Statement Relating to Defence" laid down that "the prime function of the Royal Air Force is to provide an effective deterrent to any attack upon the vital interests of this country whether situated at home or overseas." It will be noticed that this pronouncement of policy does not restrict the function to the defence of the realm against air attack only. In concert with the Navy and Army, therefore, it is the aim of the Air Force in war to break down the resistance of the enemy. The contribution of the Air Force to this aim will consist of attacks on objectives calculated to achieve this end, in addition to direct co-operation with the Navy and Army, and in furtherance of the policy of the Government at the time.

To carry out this role it is obvious that the Air Force will comprise several different classes of aircraft, each having its special characteristics. Generally speaking, the functions of aircraft fall under the following headings—bombing, fighting, naval co-operation, and army co-operation. This classification, however, is not by any means rigid. Indeed, it is fundamental to the observance of the principles of economy of force and of concentration that the classification should not become rigid. Any aircraft may under certain circumstances be called upon to perform a function different from that for which it was primarily designed whilst co-operation with both the Navy and the Army will usually call for bombing and fighting aircraft.

Bomber Forces

The chief weapon of an air force is the bomb, and it is the role of the bomber, as its name implies, to deliver that weapon at the decisive point. To this end the bomber is designed primarily to carry as large a load as the requirements of range and speed allow. Although fighting is of secondary importance to this class of aircraft, it is essential that it should be adequately armed since, apart from purely defensive considerations, the air situation at any particular phase of the war will dictate whether the tactics adopted by the bomber in reaching its objective should be to evade the enemy air forces or such as will entice the enemy to battle.

Until recently, bombers have been mainly divided into day bombers and night bombers. The former were fast single-engined aircraft of high speed but with comparatively short range and light load, whilst the latter were multi-engined aircraft in which speed had been sacrificed to the requirements of heavy loads and long range. The trend of development, however, has gradually lessened the gap between these

two types of aircraft until it is now practically non-existent. Consequently, the majority of the bomber aircraft now in production are divided into light, medium, and heavy types, all able and equipped to operate by day or by night. High speeds have been attained throughout and the division into which the type falls is now dependent on the load and range.

Outside the general category of bombers mentioned above are the bomber transport aircraft primarily designed for the carriage of personnel or stores but able if so required to carry a large load of bombs, the general purpose bomber which is usually a light or medium bomber modified to carry out the many duties of an overseas garrison, and the torpedo-bomber designed to carry either a torpedo for attacking surface vessels or an equivalent load of bombs. It must be emphasized, however, that all types of aircraft can to a greater or lesser extent be used as bombers should the situation or the policy of the Government demand.

Fighter Forces

The aim of an air force in war can only be attained by the success of the offensive action of the bomber forces, and it is therefore a natural sequence that it will be about these forces that most of the fighting will centre. The attack or the defence of bomber forces consequently calls for aircraft which, whilst strategically defensive, are able in all circumstances to adopt the most strenuous offensive measures tactically. These are the fighter aircraft, the main characteristics of which are high performance and manœuvrability coupled with the maximum fire power. Their role is to attain and maintain air superiority over the area in which they operate, whether that be in the defence of a specified zone of country, or to allow co-operation aircraft to fulfil their duties unmolested whilst denying the air to the enemy's co-operation aircraft, or as an escort to bomber or other aircraft.

In the defence of a specified zone, fighter aircraft will normally, and always more effectively, act in conjunction with ground defences with whom there must be the closest possible co-operation. The number of aircraft allotted for defensive purposes in an air force will always be kept to the minimum since it is axiomatically so much effort diverted from the main aim of the force. That minimum is largely dependent on the adequacy of the ground defences, particularly as regards the system for the location of hostile aircraft, because it is mainly on information from the ground that the defending fighter relies in order to intercept the enemy.

Army Co-operation

Air forces allocated for co-operation with a military force will normally consist of bomber, fighter, and army co-operation squadrons, and perhaps kite balloon sections. The strength and the actual composition of air forces so allotted will depend mainly on the general air situation and on the size of the military forces employed. Army co-operation squadrons, equipped with aircraft specially designed for reconnaissance duties, will usually be allotted on the basis of one for each division and one for each corps headquarters. The main role of the bomber and fighter squadrons will be to create and maintain such air superiority as will enable the army to achieve its object without undue interference from enemy aircraft. The term " air superiority " is used deliberately because actual command of the air will nearly always be in dispute and in face of enemy air forces can only be attained for short periods and over a limited area. To maintain command would not only be an almost impossible task but would entail an unjustifiable diversion of force from the main air aim.

In addition to the above, bomber squadrons will be required to render direct assistance to the Army either by the provision of aircraft for long distance reconnaissance or by attacking military objectives. In certain circumstances fighter aircraft may also be used for the attack of ground targets, but since it would be a divergence from their proper function they should only be so used in extreme emergency and for the shortest possible period.

Although the strength of air forces allotted for co-operation with the Army will probably vary in accordance with the general situation, the operational control of the forces so allotted will rest entirely with the military Commander-in-Chief. The Air Officer Commanding, who will be appointed to the headquarters of the force will decide upon the means to carry out the orders given by the C.-in-C. and will also be responsible for the efficiency and maintenance of the air forces at his disposal. It will be for the Commander-in-Chief to decide whether squadrons are to remain under the control of G.H.Q. or whether they are to be allotted to Corps or Divisions. In the latter case, although the maintenance of the squadrons will continue to be the responsibility of the Air Officer Commanding, the operational control will be exercized by the Corps or Divisional Commander concerned.

Naval Co-operation and the Fleet Air Arm

Air forces under this category can be divided into two groups: (*a*) those that are shore based for operations, and (*b*) those which are normally embarked for operations. For the purposes of this article

the former group contains the flying boat squadrons, the general reconnaissance squadrons and the torpedo-bomber squadrons, whilst the latter group comprises the Fleet Air Arm. Here again, however, the versatility of air forces presents itself since, should the situation demand, direct assistance may be afforded to naval forces by bombers and fighters not normally engaged in naval co-operation duties. This particularly applies to the bombardment of enemy bases and of the enemy fleet should it venture within range of shore-based aircraft. The reverse is equally true : forces normally allocated for naval co-operation may be required for other duties by virtue either of the serious nature of the main air situation or of the ease of the naval situation. The shore-based air forces, which for convenience have been placed in the naval co-operation category, are therefore trained for a dual role. The Fleet Air Arm is not specifically so trained but the nature of their training contains so many elements which are common to general air force work that they would be able without difficulty to take an effective part in any form of air operations.

As far as naval co-operation duties are concerned, the principal duties which fall to the shore-based aircraft are anti-submarine patrols, convoy escort, reconnaissance, and bombing and torpedo attack. At present the flying boats using water as a surface medium and the general reconnaissance aircraft which operate from land aerodromes carry out almost identical duties, but the existing general reconnaissance type must be regarded as an interim only. It is probable that their replacement will be types of greater power and range, whilst the possibility that they will merge with the torpedo-bomber type must also be reckoned as a development of the near future. There are of course pros and cons for both the flying boat and the general reconnaissance types. Both are multi-engined with excellent navigational facilities, but the fact that the former does not need an aerodrome and in certain circumstances is endowed with greater mobility will always render the type necessary for operations in areas where the shore-base requirements of the latter cannot be met.

The torpedo-bomber is at present a single-engined type of aircraft, but whether its replacement in due course will be a multi-engined type remains to be seen. Their principal function is to attack hostile ships operating within range of their bases and they would be particularly useful in countering the approach of an enemy expeditionary force. Since, however, opportunities of this kind are not likely often to occur, it would seem advisable to equip these squadrons with a type of aircraft better adapted for reconnaissance work but retaining the power to become a formidable striking force whenever the occasion arose. The merging of the torpedo-bomber with the general reconnaissance type

therefore would result in a considerable increase in the offensive power of the shore-based co-operational forces, whether it be in direct assistance of naval operations or in any other form of air operations.

The Fleet Air Arm is composed of aircraft embarked in H.M. Ships for operations with the Fleet at sea. The greater portion is borne in aircraft carriers, the remainder being carried in capital ships and cruisers. It is a self-contained force in that it consists of fighters and torpedo-spotter-reconnaissance types, the latter replacing several types which divided the duties of torpedo dropping, bombing, spotting, and reconnaissance. Aircraft borne in aircraft carriers operate as from an aerodrome, but those operating from capital ships and cruisers must be catapulted into the air and at the end of their task must return to the water if fitted with floats, or to an aircraft carrier or landing ground if fitted with wheels.

Aircraft of the Fleet Air Arm, by virtue of the fact that they have to be carried in and operated from the restricted spaces of an aircraft carrier, must always be subject to certain limitations of design. In consequence it is likely that their performance will always be inferior to that of shore-based aircraft. Although there can be no argument as to the necessity for aircraft carriers with their full complement of aircraft, it does appear that the time is approaching when ship-borne air forces will be at a great disadvantage if called upon to operate in narrow seas or beyond the range of their own shore-based air forces but within range of those of the enemy. The hitting power, which after all is the true " yard-stick " of air forces, of shore-based aircraft will always be so much greater that a considerable advantage will be gained by the naval commander who can draw his enemy within their range.

The role of the fighters in the Fleet Air Arm is similar to that of any other fighter, the principal task being to deny the use of the air to enemy aircraft. The vulnerability of the aircraft carrier to air attack renders this task particularly exacting, because even the temporary unserviceability of the deck may result in the loss of many aircraft through inability to land-on or the denial of reconnaissance aircraft to the Commander-in-Chief at an important phase of the operations through inability to take-off. The torpedo-spotter-reconnaissance aircraft, as their nomenclature implies, can be used either for reconnaissance and spotting or as a striking force which can be launched to the attack of enemy vessels at the selected moment.

The control of the Fleet Air Arm is peculiar in many aspects from the remainder of the Royal Air Force. In the first place, the establishment of aircraft and the reserves is entirely the responsibility of the Admiralty who inform the Air Ministry annually of their requirements as regards both types and numbers; the size of the Fleet Air Arm is therefore

dictated by the number and the capacity of the aircraft carriers and the number of catapults fitted to other ships. The cost is borne by the Naval Estimates and is passed to the Air Ministry in the form of a "Grant-in-Aid." Operationally, the units of the Fleet Air Arm are entirely at the disposal of the several Commanders-in-Chief, who may embark or disembark their aircraft whenever they desire. When embarked the training of the units devolves upon the Captains of the ships concerned; when disembarked it is the responsibility of the air force commander concerned to carry out such training as is required by the Captains of the ships. Thus, both the size and the operational efficiency of the Fleet Air Arm is mainly the responsibility of the Admiralty, the Air Ministry being responsible for the supply and the maintenance of equipment and for the provision of shore facilities for training.

The Fleet Air Arm is also peculiar as regards personnel in that approximately 70 per cent. of the Pilots, and all the Observers and the Air Gunners are naval personnel who retain their naval identity during their period of service with the F.A.A., although the pilots also hold R.A.F. commissions. At present the command of 50 per cent. of the Fleet Air Arm squadrons is held by naval officers seconded to the R.A.F., the remaining 50 per cent. by air force officers whose names are submitted to the Admiralty for concurrence prior to appointment. Furthermore, the approval of the Admiralty has to be obtained in the appointment of the Commander-in-Chief of the Coastal Command, who is responsible for the administration of the Fleet Air Arm in home waters. The maintenance personnel are mainly supplied by the Royal Air Force, but a number of the non-technical requirements are met by the provision of naval personnel who can also be employed on ships duties should occasion arise.

ORGANIZATION

With the exception of a few special establishments which are administered directly by the Air Ministry, the Royal Air Force is organized into four Commands at Home and six Overseas, viz. :—

Home : Bomber Command.
Fighter Command.
Coastal Command.
Training Command.

Overseas : Royal Air Force, Mediterranean.
Royal Air Force, Middle East.
British Forces in Iraq.
Aden Command.
Royal Air Force, India.
Royal Air Force, Far East.

Until recently, the Home air forces were organized into the Air Defences of Great Britain, Coastal Area, Inland Area, Halton, and Cranwell. The expansion of the Royal Air Force, however, called for a reorganization not only to meet the requirements of a larger force but also with a view to relieving operational commands of the responsibilities of initial training. Furthermore, it was desirable to make the peace organization as near as possible to that visualized for war, since it is probable that the R.A.F. will be called upon to fight and to mobilize at the same time. The complete changeover has not yet been effected, but it is the general intention to concentrate all training units and establishments in the Training Command (which now includes Halton and Cranwell), leaving the fighting units only in the operational commands. The Air Defence of Great Britain which controlled and co-ordinated the bomber and fighter squadrons has been abolished, and co-ordination now rests with the Air Ministry. This change was essential for two main reasons. Firstly, the expanded force will be too large for control by a single headquarters, and secondly, since home defence embraces more than the bombers and fighters, co-ordination of all the units based in the United Kingdom is required.

The fighting unit of the Royal Air Force is of course the squadron, the aircraft establishment of which is fixed in accordance with the tactical requirements of the particular unit. With the exception of the flying boats, squadrons are divided for maintenance, minor administration and tactical purposes into flights, each of which may consist of four or more aircraft. The carrier-borne squadrons of the Fleet Air Arm are organized into two flights of six aircraft each, but the aircraft carried in other ships are organized into squadrons or flights according to the number of aircraft carried in the ships of the particular naval squadron concerned.

Where more than one unit is located on a station, all matters concerned with station administration and the control of maintenance services is centred in the Station Headquarters. Messes and Institutes, for example, are provided on a station basis and not for individual units. Workshop facilities, stores and accountancy are similarly provided for the whole station.

Units in the United Kingdom are divided functionally and, where convenient, geographically into Groups. The size of a Group is not fixed but is dictated entirely by considerations of training or operational control. Nor is the number of Groups in a Command fixed or limited. Thus we find the Bomber Command with four Groups of bomber squadrons; the Fighter Command with a Group of fighter squadrons, and a Group of army co-operation squadrons; the Coastal Command

with two Groups; whilst the Training Command has separate Groups for Flying Training, Ground Training, and Armament Training.

Until a few months ago the Group (or Area as it was sometimes designated) was responsible for the full operational and administrative control of the stations and units allotted to it. The Command dealt with the Groups only, and consequently the latter acted in many cases merely as "post-offices," with the resultant delay in administration. This also entailed the provision of a full operational and administrative staff at both the Command and Group headquarters. The recent reorganization, however, has aimed at the separation of the administrative from the operational control and only one administrative filter is now provided between Stations and the Air Ministry, with the dual object of attaining speed by the cutting out of unproductive links in the chain of command and of encouraging decentralization of responsibility. The Group Commander is now responsible only for operations and training of the units under his command and for administration of the personnel. All other matters of administration are dealt with directly between the Command Headquarters and the Stations.

This devolution of administration from the Group to the Command would of course have resulted in the inundation of the Commander-in-Chief in a mass of administrative work. It has, therefore, been decided to create at the Headquarters of Operational Commands, the post of Air Officer i/c Administration—similar to the Major-General i/c Administration in the Army, so that the Commander-in-Chief may be able to devote more time to the strategical, operational, and training aspects of his command.

THE AUXILIARY AIR FORCE

The Auxiliary Air Force which forms part of the acknowledged first line strength of the Royal Air Force is recruited on a territorial basis through the medium of the Army and Air Force Territorial Associations. The force consists of bomber, fighter, and army co-operation squadrons which are organized in exactly the same way as the regular squadrons and are manned by auxiliary personnel with the exception of a small cadre of regular personnel for instructional purposes and for the supervision of maintenance. Squadron and flight commanders are all auxiliary officers. They are, therefore, comparable to the Territorial units of the Army, but whereas they are at present grouped separately, it is probable that in the near future they will be transferred to the regular groups who will be responsible for their operational control in war.

Cadre squadrons which also form part of the acknowledged first line strength of the Royal Air Force consist of one flight of regular personnel

and one or two flights of personnel of Special Reserve personnel. Apart from the terms of enlistment of the reserve personnel, the squadrons are on the same plane as those of the Auxiliary Air Force. They have not, however, the advantages of the County Associations behind them, and it has been decided to convert them to Auxiliary Squadrons. Only one cadre squadron now remains on the establishment of the Royal Air Force.

THE ROYAL AIR FORCE RESERVE

The reserve of personnel behind the regular forces may be divided into two categories. First there are those who pass into the reserve after a period of service with the regular forces, and secondly there is the direct entry reserve which will be met by the recently announced Royal Air Force Volunteer Reserve. The size of the former is based on the assessed requirements to bridge the gap between the outbreak of war and the time when the Volunteer Reserve will have attained a pitch of efficiency which will enable them to be used in operational units. The establishment of the Volunteer Reserve in turn is fixed to complete the requirement of personnel until the training can be completed of those enlisted after the outbreak of war. Owing to expansion factors the regular reserve will be short of requirements for a few years and consequently, as an interim measure only, a number of pilots are being trained directly for the reserve. They are given a short service commission of one year only; they do not serve in regular units but are passed to the reserve on completion of their course of instruction at a Flying Training School. Mention must also be made of the Auxiliary Air Force Reserve which, like the Territorial Army Reserve, is composed of personnel who have completed their term of service with a unit of the Auxiliary Air Force. They differ from the general reserve in that they are regarded as reserves behind their particular unit only.

THE GROUND DEFENCES

The system of anti-aircraft ground defences in the United Kingdom comprises a military and a civil organization. The military units are part of the Territorial Army and consist of anti-aircraft batteries and searchlight battalions. Although raised and trained by the War Office, they are for purposes of co-ordination placed under the operational control of the Commander-in-Chief, Fighter Command. The civil organization is known as the Observer Corps who man a number of observation posts placed at selected parts of the countryside for the purpose of reporting the movements of aircraft in order to give as much warning as possible to both the ground and air defences of the approach of hostile forces.

THE TREND OF NAVAL CONSTRUCTION

(The Editor wishes to make acknowledgments to Mr. Maurice Prendergast for his assistance in the compilation of this review.)

WITH the close of 1936, the restrictions on warship construction imposed by the Washington Treaty of 1922 and by the London Naval Treaty of 1930, lapsed. To-day the Powers are all free to build as many ships of any class as they like. The verbose, but anæmic, London Naval Treaty of 1936 only imposes certain qualitative limitations on the fleets of Britain, the United States, and France, although it is hoped that, one by one, other nations will in due course come within its fold. In these circumstances, the time is ripe to take stock of the trend of naval construction abroad and to consider how far it should influence that rebuilding of our Navy on which we are now free to embark. In this task we shall have the invaluable assistance of the new edition of *Jane's Fighting Ships*.[1]

Battleships.

In spite of the extravagant arguments of those air enthusiasts whose imagination outstrips their intelligence, the battleship, as a type, remains the basis of sea security and continues to be recognized as such by all the principal naval Powers. But this does not mean that battleship design is taking no account of new forms of warfare: just as the introduction of shell fire led to side armour and the development of the torpedo to an anti-torpedo craft armament and to " bulges," so the increasing range of the gun with the steeper angle of descent and greater penetrative capabilities of the shell—even more than the advent of the aeroplane bomb, have called for heavier deck armour. The danger of attacks by aircraft is being met, as was that of attacks by torpedo craft, by a suitable gun armament with its appropriate fire control, and by the requisite protection to the hull. Moreover, the battleship, like every other vehicle, ashore, afloat, or in the air, is moving with the times in the matter of increasing speed.

Until 1st January, 1937, Britain, the United States, and Japan

[1] *Jane's Fighting Ships*. 1936. (Sampson Low, Marston & Co.). Edited by F. E. McMurtrie, A.I.N.A. £2 2s. 0d.

were prohibited from laying down new capital ships, and the best they could do was to tinker with their old ones in an endeavour to modernize them—an expensive and not very satisfactory process. France and Italy not having made full use of their tonnage quota, were free to lay down new vessels ; this the former felt impelled to do on the appearance of the three German " pocket " battleships. These vessels were legitimate replacements under the Versailles Treaty of the superannuated " Preussen," " Lothringen," and " Braunschweig " ; but the combination of an armament of six 11-in. guns with a speed of 26 knots upset the balance of values of all existing capital ships, except our own and possibly Japan's battle cruisers, for the simple reason that the German ships were too fast for any battleship to catch and too powerful for anything less than a battle cruiser to kill. The French reply to them was the " Dunkerque " and " Strasbourg " [1]—ships of more than double the displacement of the " Deutschlands," armed with eight 13-in. guns, and having a speed of 30 knots and much thicker armour.

The next move was made by Italy, who, in October, 1934, laid down two 35,000-ton battleships, the " Littorio " and " Vittorio Veneto," with an armament of nine 15-in. guns and a designed speed reputed to be in the neighbourhood of 34 knots. Full details are as yet lacking, but it seems obvious that these vessels will have to economise somewhat in armour if they are to be so well equipped in guns and engines.

In the autumn of last year Germany burst her bonds and laid down two 26,000-ton battleships, named the " Scharnhorst " and " Gneisenau " after von Spee's ships of Coronel and Falklands fame. These appear to be intended as the answer to the French " Dunkerques." Their design seems to indicate that Germany is adhering to a principle which was justified by her experience in the late war—she is content to arm her ships with guns of a less calibre in order that they may have better protection than those of their contemporaries. So we find the main armament of the " Scharnhorsts " is nine 11-in. as compared with the eight 13 in. of the French ships. In practice this disparity may not mean any inferiority in fire effect because, within limits, it is the weight of metal per minute which *hits* an enemy which counts, and the lighter gun may make up in rapidity of fire what it lacks in weight of the individual shell. Below a certain size, of course, penetration starts to deteriorate.[2]

---

[1] The " Dunkerque " has run her trials ; the " Strasbourg " is not due for completion until 1938.

[2] See an article on " Our Next Battleships—The Need for Speed," by " Observer," published in the JOURNAL for November, 1935, p. 749. A similar policy was advocated in order that our own new ships might have the requisite protection and speed.

The Franco-German competition has not stopped there: in 1936 Germany laid down a 35,000-ton battleship, which it is believed will carry a main armament of 14-in. guns and have a speed of 30 knots, and a sister ship is to follow in 1937. France is replying with the "Richelieu" and "Jean Bart," also of the maximum Treaty displacement, to be armed with eight 15-in. guns and having a designed speed of 33 knots.

In the light of these developments, details of our "King George V" and "Prince of Wales," laid down on 1st January, will be awaited with much interest. All that has been made public about them as yet is that they will be 35,000-ton ships and carry an armament of 14-in. guns. It is known that very special attention has been paid by the Admiralty lately to the whole problem of protection against bomb and torpedo attacks; our new battleships, therefore, are not likely to be deficient in armour or water-tight subdivision, while the very considerable reduction in the calibre of the main armament, as compared with the "Nelson's" and "Rodney's" 16-in., gives grounds for hope that they will not be lacking in speed.

It is remarkable that the United States naval authorities should be content with a speed of only 26 to 27 knots in the ships which are to be laid down in June of this year. Mr. Swanson's argument that they are building "battleships, not battle cruisers," seems to ignore the fact that a ship which is inferior in speed can never hope to be able to catch, hold, and kill her rival or prevent her preying on weaker craft: for example, there will be no American ships which could catch, hold, and kill any of the latest German battleships. As regards armament, the U.S. Navy Department is avowedly waiting to see what the Japanese will do. Unless the latter subscribe, in effect at any rate, to the Three Party Treaty and limit the armament of their new battleships to 14-in. calibre, the American ships will mount 16-in. guns. It is possible, of course, that if the lighter armament is adhered to, the ships will be faster than is at present projected.

Another feature of the capital ship of to-day is the addition of aircraft to her ever-increasing equipment. The majority of the battleships of all navies have had, or are having, one or more catapults installed for launching float-planes. The four latest French ships are being provided with four aircraft each; the older "Lorraine" has had a centre twin-13.4-in. turret removed and replaced by a catapult. All the German battleships of the "Deutschland" class and later have been or are being given a catapult and two aircraft each. Italy's new ships are to have one or more catapults and four aircraft; the older

battleships "Cavour" and "Cesare" have had their centre twin 12-in. turret replaced by two catapults and four aircraft. (Incidentally these ships have been rearmed, lengthened by 34 feet and their speed increased from 22 to 27 knots). Japan has been slow to introduce aircraft into her capital ships, but catapults are being installed gradually.

Aircraft are rapidly making their appearance in our own battleships and battle cruisers, and in the course of their recent reconstruction the "Malaya," "Warspite," and "Repulse" have been given hangars to house four aircraft, and equipped with catapults and a crane. This is not an indication of any movement towards a combined battleship and aircraft carrier—a rather visionary design, and there is no indication that any nation intends to build a class of vessel which, in practice, could only be a second-rate fighting ship and an inefficient carrier.

A new development is the tendency to eliminate the torpedo armament from capital ships. In the late war it certainly did not prove its utility or justify the risk attached to the large under-water compartments required for submerged tubes. The United States, France, Germany, and Italy are omitting torpedo tubes in all their latest battleships. As they have recently been removed from three of our "Queen Elizabeth" class, it would seem that we are following suit.

The disposition of the main armament of capital ships is governed to a large extent by considerations of weight, and by grouping the turrets together, as in our "Nelson" class and the French "Dunkerque," appreciable economy in the armouring of vitals is obtained. But the question is one which also has a distinct bearing on the relations between tactics and fire effect. For instance, the "Nelsons" and "Dunkerques," with all their guns bearing ahead, are well suited for chasing, but not for being chased. At the other end of the scale, if the forecast in *Jane's Fighting Ships* is correct, there will be the new Italian ships with six 15-in. guns bearing astern, and only three ahead—obviously better equipped for fighting a retreating action. The German "Scharnhorsts" seem to aim at the happy mean by giving preference to ahead fire (six 11-in.) without neglecting stern fire (three 11-in.). As all modern turrets have wide arcs of bearing, there is not much to choose between any of these dispositions for a more or less broadside action; but from a tactical point of view there is much to be said for the well-balanced arrangement of our "Queen Elizabeths" and "Royal Sovereigns," with their two turrets forward and two aft, and, as ships, they are certainly more pleasing to the eye than the later "Nelsons."

Aircraft Carriers.

Apart from the fact that the new Treaty reduces the displacement of carriers in three navies from 27,000 to 23,000 tons, there seems to be a growing preference for a smaller type. The huge "Lexington" and "Saratoga" (33,000 tons), the "Kaga" and "Akagi" (26,900 tons), and even our "Eagle" (22,600 tons), "Furious," "Courageous" and "Glorious" (22,500 tons) are recognized as being unduly large and vulnerable baskets with an over-concentration of eggs. The United States "Enterprise" and "Yorktown" (19,900 tons), "Wasp" (14,700 tons), and recently completed "Ranger" (14,500 tons); the Japanese "Soryu" and "Hiryu" (10,500 tons) and "Ryujo" (7,100 tons); and the fact that our "Ark Royal" (22,000 tons) is to have smaller successors in the "Illustrious" and "Victorious," all show that the trend is towards a lighter and more economical type. It must be realized, however, that with the growing number of aircraft required for fleet work, a reduction in the size and capacity of the individual carrier will mean that a greater number of these ships will be required.

The gun armaments of carriers also show a general reduction from the 8-in. calibre of the early American and Japanese ships, and the 6-in. of our "Eagle" to purely A.A. armaments such as the 5-in. guns in the "Ranger" and "Ryujo" and their successors, and the 4.7-in. A.A. in our "Ark Royal." This implies that, in future, carriers will only be expected to protect themselves against aircraft and, perhaps, torpedo attacks; and that they will be shielded by the battle fleet, cruisers and escorting destroyers from encounters with more heavily armed vessels.

Cruisers.

The London Treaty of 1936 decrees that there shall be no more 8-in. cruisers. But even those nations who have not subscribed to it, show no desire to perpetuate the type. Such a heavy armament, especially on a limit of 10,000 tons, meant an undue surrender of speed or protection or both. To a great extent it has been American insistence which perpetuated the type ever since the Washington Treaty; but Admiral Standley has at last admitted that it has its defects and that a smaller class has its merits. So far, however, the U.S. Navy Department, while reducing the armament to 6 in., has maintained a 10,000-ton displacement for their new "Brooklyn" class. These are clearly intended to be the answer to the Japanese "Mogami" type; the latter nominally displace only 8,500 tons, but their fifteen 6.1-in., as compared with the fifteen 6-in. of the American ships and an exactly similar

A.A. armament of eight 5-in. and speed of 33 knots, would seem to necessitate more tonnage than is admitted.

Italian cruisers are notoriously suspect both as regards the conditions under which they obtain their phenomenal speeds on trials and their professed tonnage: the "Trento" and "Trieste," contemporaries of our "London" class, carry the same main armament (eight 8-in.), a much heavier A.A. armament (sixteen 3.9-in. as against our four 4-in.), and appreciably more side armour, yet they have achieved an average speed of 36.6 and 35.6 knots respectively, as compared with our ships' average of about 32.5 knots. The later "Bolzano," with slightly lighter armour, is credited with an average speed of 38 knots on an eight-hours trial. The designed horse-power of the Italian cruisers' engines is 150,000, as compared with the 90,000 to 120,000 of the French, 107,000 of the American, 100,000 of the Japanese, and 80,000 of the British ships of a similar class. How is it done on the same displacement?

The American notion that nothing less than a 10,000-ton, 8-in-gun cruiser could be counted on to deal with a multiple 6-in. gun armed merchant liner is now exploded, and the 8,000-ton, 6.1-in. gun vessel of the new Treaty is probably only the "sealed pattern" of a fashion which will be pretty generally followed. Germany had to demonstrate her independence by laying down three 10,000-gun, 8-in.-gun ships; but these will probably be the last of the type.

France is completing six useful little ships of the "La Galissonnière" class, displacing 7,600 tons (9,120 full load), carrying nine 6-in. and eight 3.5-in. A.A. guns and having a designed speed of about 32 knots. These vessels are interesting, too, because they have a hangar capable of housing four aircraft, and a catapult and are built with a square stern adapted for towing a landing-on (Hein) mat.

Italy is completing her two "Garibaldi" class of 7,874 tons (9,000 tons full load), carrying ten 6-in. and eight 3.9-in. A.A. guns, four aircraft with two catapults, and having a designed speed of 35 knots. Again, how does she do it on the displacement?

In view of the comparatively large cruisers still being laid down by foreign Powers, we have been compelled to build the ten ships of the "Southampton" class, displacing 9,000 tons and armed with twelve 6-in. and eight 4-in. A.A. guns. Exact details of their armour have not yet been made public; but they will be better protected than the "Londons," while their speed will be little, if at all, inferior to them. The 1936 Estimates also made provision for five smaller 5000-ton cruisers—"Dido" class—which will also carry 6-in. guns.

Aircraft are now being universally included as part of cruisers' equipment, and in our " Southampton " class hangars are provided just abaft the foremost funnel. It is interesting to recall that the " Dragon," " Dauntless," " Carlisle " and " Capetown " all had hangars during the latter part of the War, although they were subsequently removed when it was our policy that aircraft should only be used from carriers.

All the torpedo tubes have been removed from the later American 8-in. cruisers, and none are being mounted in the new 10,000-ton, 6-in.-gun ships. On the other hand, while the earliest Italian cruisers of this type (" Zara " class) have no torpedoes, the later ships follow the fashion of other nations, including ourselves, in mounting above-water tubes. Nevertheless, there seems to be a general inclination towards eliminating the torpedo armament from heavier ships, and relegating it to the lighter and faster craft.

Leaders and Destroyers.

While the tendency is to reduce the size and armament of larger types of warships, the flotilla leader and destroyer have steadily increased in both, until to-day many of the former are virtually small cruisers, while the destroyer now aims at being the antidote to her own kind, instead of to the practically defunct torpedo-boat.

Amongst vessels officially classified as " leaders " we find the French " Mogador " class, which, fully loaded, will displace over 3,000 tons, and which will carry eight 5.5-in. and four 37-mm. A.A. guns and nine 21.7-in. tubes ; the Polish " Grom " class (built in England), of 2,200 tons, armed with seven 4.7-in. and four 3-in. A.A. guns, and six 21-in. tubes ; the American " Porter " class, of 1,850 tons, with eight 5-in. (dual purpose) guns and eight 21-in. tubes ; and the Japanese " Hubuki " class, of the same displacement, armed with six 5.1-in. and two A.A. guns, and nine 21-in. tubes. Speed, as might be expected, rises more or less with tonnage from the 34 knots of the Japanese vessels to the 38 knots, or more, of the French.

Our sixteen " Tribals," laid down in 1936, are doubtless intended to be contemporaries of those foreign leaders. On their 1,850 tons displacement they are to carry seven 4.7-in. guns and eight 21-in. torpedo tubes. The designed speed has not yet been announced.

The destroyer, from being a craft of 600–700 tons, has grown to double that displacement. Notable new types are the American " Mahan " class, which on 1,395 tons carry five 5-in. (dual purpose) guns and eight 21-in. torpedoes,[1] and have a designed speed of 36.5

[1] It is believed that later vessels of this class will mount twelve tubes.

knots; the Japanese "Shigure" class, of 1,368 tons displacement with five 5-in. guns, eight tubes, and 34 knots; the French "Le Hardi" class, of 1,772 tons, mounting six 5.1-in. guns and six 21.7-in. tubes, and having a designed speed of at least 37 knots; and the Italian "Oriani" type of 1,498 tons (about 1,850 fully loaded), carrying four 4.7-in. and four 37-mm. A.A. guns and six 21-in. tubes, with a designed speed of 39 knots.

British destroyers of the 1935 and 1936 Programmes—eight "Javelins" and eight "Intrepids"—will displace the normal 1,350 tons, carry four 4.7-in. guns and eight 21-in. tubes, and have a designed speed of 35.5 knots.

A review of these developments tends to confirm the impression that, for some time now, an attempt has been made to combine too many functions—and consequently excessive armaments and equipment—in one type of vessel. It would seem to be more logical and more economical to produce a class with a powerful gun armament and reasonably high speed to act as the battle fleet's satellites and to counter-attacks by torpedo-craft (destroyers and submarines) and low-flying aircraft; and another, smaller type, armed primarily with torpedo tubes and having the highest possible speed, whose functions would be to deliver torpedo attacks—especially at night, and to carry out night reconnaissance.[1]

Submarines.

Since the War, the submarine has grown in size, endurance, habitability, surface speed (where required), and armament. The 1936 Treaty has renewed the 2,000 tons and 5.1-in gun restrictions of the 1930 Agreement, and except for a few freaks like the French "Surcouf," the American "Nautilus," "Narwhal" and "Argonaut," and our "X.1" (now on the sale list), there has been no tendency to exceed this size. Japan has built or is building eight 1,900-ton craft, known as the "I" or "fleet" class, each of which carry six 21-in. tubes; the first four and the last two mount two 5.5.-in. guns. "I.5" and "I.6" carry one 5-in.; as "I.5" has a tubular hangar abaft the conning tower with a small seaplane instead of the second gun, it seems probable that "I.6" will be similarly equipped. The latest American submarines include twelve of 1,450 tons, whose armament is six 21-in. tubes and a 3-in. A.A. gun. France and Italy are building under-water craft of some 1,350 tons.

---

[1] See "Fleet Gunboats," by "Navarino," in the JOURNAL for August, 1936, p. 562.

After our " Thames " and " Porpoise " classes, of about 1,800 tons and 1,500 tons respectively, we are returning to a smaller type in the 1,100-ton " Triton " class.

Most foreign nations are also building small, coastal type, submarines. Germany, who has had more experience of the offensive use of submarines than any other nation, has started to rebuild her flotillas with quite small craft, probably because they can be produced quickly. " U.1 " to " U.24 " displace only 250 tons; " U.25 " and " U.26 " 712 tons; and " U.28 " to " U.40 " 500 tons; but from " U.25 " onwards they all carry six 21-in. tubes.

A surface speed of 20 knots is not phenomenal for modern submarines, and the " Thames " and her two sisters attained over 22 knots on trials. The normal surface speed of the modern submarine is in the neighbourhood of 17 knots, and the submerged speed 9 to 10 knots.

Miscellaneous.

Amongst other noticeable features in modern naval construction is the tendency to economize weight by welding, by the use of very light plating where permissible, and the adoption of large and few boilers rather than small and many; the introduction of higher pressures and superheated steam; and, of course, the universal use of oil fuel.

Another weight-saving device is the multiple-gun mounting: this is no longer confined to the turret armaments of battleships, and the triple mounting—even a triple 8-in., has found its way into cruisers; and the twin—5.1-in and downwards, into destroyers.

Considerations of weight, space, fire-control, ammunition supply, and reduction of personnel all point to the necessity for replacing the conglomeration of auxiliary armaments by a general purposes one, suitable for engaging aircraft, torpedo craft, or submarines. There are indications, especially in the United States navy, that this problem is on its way to being solved. Anti-torpedo craft guns have for some years been given an elevation of about 60 degrees; it should be well within the scope of our designers to produce a mounting which will provide for 90 degrees elevation, adequate depression, light handling, and rapid loading for guns up to 5 in.

The very fast motor torpedo-boat of the C.M.B. type is generally popular, and our successes with it in the late war have commended it to many navies.

The most noticeable feature of all, however, is not so much any very striking novelty in the latest construction, but its growing volume. The round-table meetings at Geneva, the disarmament conferences, naval

conversations, treaties, and pacts which have been the milestones in international relations since the War, have all promoted the most intensive comparisons of national armaments; and to-day there is scarcely a single government which is content or feels secure with what they have got. Unless a "formula can be found" which will put an end to all this international chatter and allow the ordinary citizen, no matter what his race or creed, to pursue his business in peace and without the alarms and excursions manufactured by his political leaders, *Jane's Fighting Ships* will grow into a very bulky volume in the years to come.

THE TREND OF DEVELOPMENT IN AIRCRAFT

SOME IMPRESSIONS OF THE PARIS EXHIBITION, 1936

By Flying Officer A. C. Clinton, A.F.R.Ae.S., R.A.F.O.

THE Fifteenth International Aero Exhibition at Paris last November displayed designs which showed appreciation of the practical requirements of a modern air force, and military aircraft dominated the exhibits—a contrast to the previous show in 1934. There was an absence of freaks in machines and engines, and the *multi-place de combat* in its modern form was balanced by other types for various duties. Britain was represented by sixteen firms : two aircraft manufacturers, four aero-engine constructors—one of whom exhibited aircraft, and the remainder were manufacturers of instruments, materials, and accessories. France occupied the majority of the stands, and was supported by Britain, Czecho-Slovakia, Poland, Russia and Holland ; in fact, it was almost a League affair. America was represented by the Curtiss Wright engines. Germany and Italy, unfortunately, took no part.

Most of the exhibits showed that advantage had been taken of the progress made in aircraft and aero engine design during the last two years, but while the aircraft looked very sleek and efficient, it was difficult to examine them closely in order to find out if they would be suitable for rapid production, and whether proper arrangements were made for efficient operational work. It was not obvious in some aircraft that attention had been given to heating, ventilation, and sound proofing of the cabin, factors which are of considerable importance for the crew of modern military aircraft. Practically all the machines were monoplanes, mostly twin-engined, only a few single-engined types being shown. They were all very clean looking, most of them had retractile undercarriages, flaps, and enclosed controls, and in most cases construction was of the stressed skin type.

The aeroplane types included Bomber, Reconnaissance, Fighting, Commercial, and Sports, while the engines of various designs covered a good power range and comprised Radial, In-line, V-type, and Horizontally opposed types.

The display of instruments, equipment, and material was comprehensive, and of high standard. There was, however, little to suggest great improvement in such essentials as silencing, flame damping of engines, instruments for accurately measuring fuel consumption, anti-freezing of carburetters, and the de-icing of wings. Wireless communication, and aids to navigation showed minor refinements to existing standards. An item of equipment universally discussed was the aero canon.

Power and still more power is constantly demanded by designers of transport vehicles in general, but the aircraft designer, who was insatiable in this demand until recently, now learns that the minimum drag, or maximum streamline efficiency conditions of the aircraft must be maintained as far as possible if performance is not to be sacrificed. Mere brute horse-power will not suit present-day standards, and the power plant must blend with the complete aircraft design. In so doing it is found that comparatively less power is required for a given performance, as can well be imagined supposing a radial engine can be changed into a shallow flat engine concealed within the contour of a wing. Since the power plant plays so important a part in the aircraft performance, a few remarks reviewing the aero engines will precede reference to the interesting types of aeroplanes. Engine powers ranged from less than 50 h.p. to 1,500 h.p., so that all classes of aircraft from the light sports type to the high performance military craft could be suited. These notes on engines refer to those types which reflect some progress in design or output, and do not include the many others that are not of prime interest to the Services.

Air-Cooled Radial Engines

One of the outstanding developments is the sleeve-valve engine which is now ordered for the Vickers " Vildebeest " general purpose aircraft for the R.A.F. The 9-cylinder " Perseus " of 810 h.p. at 5,000 feet is the selected type.

Two other sleeve-valve types, " Aquila " and " Hercules," were shown by the Bristol Company, which is the only firm producing a range of these engines. The 9-cylinder " Aquila," of smaller diameter than the " Perseus," and of 500 h.p., which is installed in the Bristol twin-engined passenger machine. An improved engine of this type is installed in the Vickers " Venom " high performance single-seater fighter.

The " Hercules," a two-row engine of 14 cylinders, is developed from the existing series of sleeve-valve types. While no information may be published, the engine would appear to be the most powerful one shown,

and, therefore, not less in output than that of the Gnome Rhone L.18, which claims 1,400 h.p. for take-off.

One of the commercial sleeve-valve " Perseus " engines, which has been in the service of Imperial Airways for some time, was on view, and it was stated that twenty-five engines of this type would be installed in some of the Short " Empire " Flying Boats now under construction.

Interesting developments in 14-cylinder, two-row radials, were shown by Armstrong Siddeley, Gnome Rhone, Hispano Suiza, and Renault. The Armstrong Siddeley " Tiger " IX, giving 795 h.p. at 6,250 feet, will be installed in the new " Whitley " bomber made by Armstrong Whitworth, and also in the air-liner type A.W.27, made by the same firm for Imperial Airways. Gnome Rhone engines are used in large numbers on the Continent, in fact, the various types are built under licence in eight countries. Many of the French aircraft are powered with these engines, the best known being the Mistral Major K.14, giving 1,000 h.p. at 11,000 feet. New types were the small diameter two-row radial N.14 rated at 650 h.p. at 13,000 feet, and the bigger two-row L.18, giving 1,300 h.p. at 11,000 feet. Two-row 14-cylinder engines were shown by Hispano Suiza. The type 79, giving 1,100 h.p. at 9,800 feet, which is fitted to the Loire 250, single-seater fighter, and the small diameter type 80 rated at 680 h.p. at 11,400 feet. This small diameter engine is a compact unit, and is installed in two of the most interesting fighting machines exhibited—the Fokker G.1, and the Potez P.63. The Renault 14-cylinder two-row engine is a new type giving 1,000 h.p.

The 9-cylinder radial engines shown covered a wide power range, the more interesting types being those by Armstrong Siddeley, Bristol, Curtiss Wright, Gnome Rhone. The Armstrong Siddeley " Cheetah " IX, giving 310 h.p., is used in the Airspeed Trainer, a particularly versatile type of twin-engined machine useful for training pilots for modern types of military aircraft. The " Cheetah " is also used in the twin-engined Avro " Anson " coastal reconnaissance aeroplane. Bristol showed two types of 9-cylinder radials now in production for Service aircraft: the " Pegasus " X, rated at 850 h.p. at 4,000 feet—the " Pegasus " type is in production for the Bristol Transport Bomber, the Handley Page " Harrow," Vickers " Wellesley " Bomber, the Fairey " Swordfish " and the Saunders-Roe flying boat " London "; another mark of " Pegasus "—the XC—is the power unit for the " Empire " flying boats now being supplied to Imperial Airways. The " Mercury " type engine is being installed in the " Westland Lysander " Army Co-operation monoplane, and in the Gloster " Gauntlet " single-seater fighter. The Curtiss Wright Company showed the " Cyclone " G, giving 1,000 h.p. for take-off, this engine is installed in two of the new American bombers, the Douglas and the Boeing.

In-Line Engines

Several cylinder arrangements were on view, and many of them were air-cooled. They included vertical single row, both upright and inverted; Vee, upright and inverted, and horizontally opposed. The Rolls-Royce "Merlin" Vee, liquid cooled, is a development of the well-known "Kestrel" types, which were also shown. The "Merlin" gives 1,065 h.p. at about 16,000 feet, and is of compact design with comparatively small frontal area: it is being installed in the new R.A.F. fighters, Hawker "Hurricane," and Supermarine "Spitfire," and in the Fairey "Battle" day bomber. The "Kestrel" is the power unit for the night bombers, Fairey "Hendon" and Handley Page "Heyford."

A most interesting motor, in view of the trend towards clean-looking aircraft, was the flat horizontally opposed type—the Lorraine 12.D (Potez licence) of 475 h.p. at 9,800 feet. This air-cooled engine was proposed for installation in the wings of the twin-engined Potez 63. The wings of this machine are of shallow section, so that the engine could not be completely buried, and would project in front, but this step towards the ideal of the totally enclosed power plant should be of great interest.

A 900 h.p. Lorraine Vee engine was the power unit for the new "Koolhoven" fighter mentioned later, an instructive experimental installation.

Renault showed several air-cooled engines of the inverted vertical and Vee types. The inverted Vee types ranged in power from 450 to 1,000 h.p., and some of these were installed in various aircraft. The 450-h.p. type is an alternative for the new Hanriot twin-engined fighter.

Salmson showed a new inverted Vee type engine, air-cooled, giving 450 h.p. at 3,800 feet. This engine, like many others, is arranged to mount a cannon gun, and is installed in the Mureaux single-seater fighter.

A large liquid-cooled Vee type engine was shown by Russia; and though no power was stated, it is estimated at about 1,300 h.p. While not having the background of many years of cumulative design experience, this engine is the result of a comparatively short period of intensive work by ambitious engineers, and further progress should be of great interest.

Coatalen showed a water-cooled Vee type compression ignition engine of 550 h.p. at 10,000 feet. This engine was of small frontal area, and should be a promising development in view of the reviving interest in C.I engines. It would have been of value had the Germans exhibited engines, since they are manufacturing large numbers of the C.I. types.

The only C.I. engine of German origin was that on the stand of the Compagnie Lilloise, the Lille 6.B.SS, built under Junker licence, and giving 540 h.p.

Trend of Aero Engines

The tendency of engine design is towards more air cooling, and this application to the inverted Vee type, and the horizontally opposed arrangement is of great interest. The air-cooled radials, both single- and double-row types, were almost predominant in the high-power class, in which class the Rolls-Royce " Merlin " was the only outstanding liquid-cooled type. Greatest power and advance in design were embodied in the Bristol sleeve valve " Hercules." The installations of all the air-cooled radials showed uniformity in methods of cowling, while the trend in design is towards the small-diameter, compact, double-row type, which can be well faired into the leading edge of the wings.

Supercharging is used on all types, and the tendency is for the operating height of military engines to be increased, a particular example of this being the two-stage supercharged " Pegasus " which powered the Bristol height record monoplane. The engine is the result of the development of a standard type for high altitude flying.

The use of controllable pitch airscrews is universal for all military types, except the " Koolhoven " fighter, with its co-axial airscrews. Most in-line engines were designed to mount the aero canon.

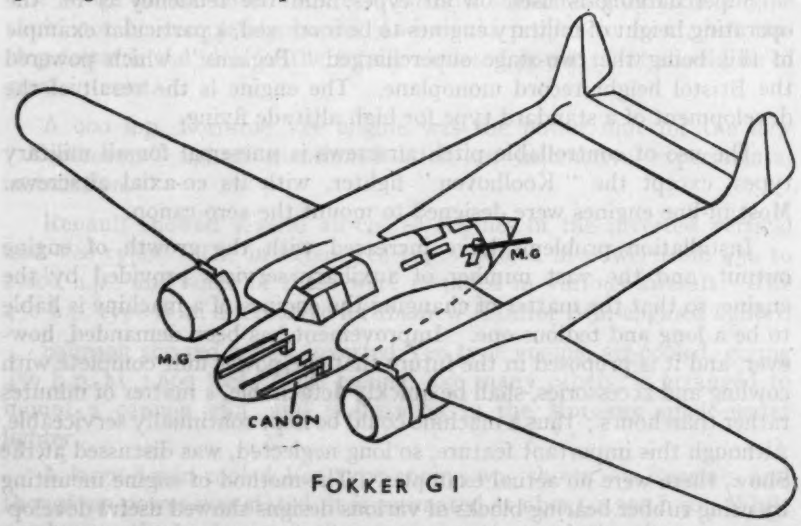
Installation problems have increased with the growth of engine output, and the vast number of auxiliary services provided by the engine, so that the matter of changing the engines of a machine is liable to be a long and tedious one. Improvement has been demanded, however, and it is proposed in the future that the power unit complete with cowling and accessories, shall be quickly detachable, a matter of minutes rather than hours ; thus a machine could be kept continually serviceable. Although this important feature, so long neglected, was discussed at the Show, there were no actual examples. The method of engine mounting by using rubber bearing blocks of various designs showed useful development, and should be helpful in reducing odd vibrations that occur even with the best engines and airscrews. The application of rubber mountings was unsatisfactory on some engines owing to great inaccessibility.

Although air-cooled engines were in the majority, the methods of controlling the cooling air varied considerably. In general, all air-cooled engines were enclosed in tubular cowling, some had sectional controllable flaps at the exit end, while others used a narrow continuous band at the end of the cowling that could be expanded or contracted. Some engines had baffles inside the cowling, while others had not, and

in some cases the baffles had been really carefully made and accurately fitted, but the work of the maintenance mechanic is not made any easier, and goodness knows how sparking plugs could be quickly extracted from the maze of bent tin work.

Aircraft.

Great interest was shown in the Fokker G.1 " Reaper " twin-engined fighter, designed to attack heavily-armed fast bombers. The crew of two are in a central nacelle through which passes the middle wing; each engine nacelle is faired into the wing and continues as a small tubular boom to the tail plane, carrying a fin and rudder on each boom. There are four fixed guns in the nose, two Madsen 23-mm. " canons " and two 7.9-mm. Madsen machine guns, the ammunition carried being 200 23-mm. shells, and 1,700 rounds for the machine guns. The fuselage ends in a machine-gun turret rotatable about the longitudinal axis through 360 degrees, with blind spots due to the two booms and the tail.



FOKKER G I

Although twin-boom machines have been used before, this machine is different, and when further developed should make an efficient fighter, especially if flat engines buried as far as possible in the wings could replace the radials. The crew's quarters appeared to be cramped, without any form of heating, and no protection from noise was apparent. These factors need attention in modern machines generally if the crew is to remain in good fighting condition throughout the flight. The Fokker can be used for bombing by adjustment of the load to permit carrying 770 lb. of bombs for 930 miles. In some ways this seems a

retrograde step for the size of the machine, but if scaled up a useful medium bomber might be obtained if such a class of machine is going to persist. As an alternative duty it is suggested that the Fokker with less armament should be developed for greater speed, so that it could be used for special reconnaissance work during hostilities, when up-to-date information is so essential to commanders. A fast reconnaissance scout must outfly all other machines, since its duty is to obtain information on which would depend the operation of the combined Services. A speed of 293 m.p.h. is claimed for this fighter, which carries fuel for 840 miles and is powered with two Hispano Suiza engines of 680 h.p.

The "Koolhoven" FK.55 is another original monoplane fighter. The fuselage is of triangular section with the apex underneath; the wing joins the top of the fuselage, which is short and stubby and is topped by the pilot's cupola. Forward-downward view looks good, but vertically downwards cannot be the best owing to the width of the body, which houses the 900-h.p. Lorraine V.12 engine placed behind the pilot. The engine is practically on the centre of gravity, so that control forces for manœuvring are reduced, as shown by the absence of normal type ailerons. The engine has a driving shaft extending to the nose of the fuselage, where two co-axial airscrews are driven, through gearing, in opposite directions. This arrangement precludes the use of controllable pitch airscrews, now used on all high-performance machines. The effect of torque is eliminated with these tandem airscrews, and this is achieved also in twin-engined machines by using "handed" engines giving opposite rotation of the airscrews. It is surprising how long it has taken for this development to mature, especially since it makes for ease of piloting, and also considering that some of the pioneer aircraft in the dim past naturally adopted the principle. It may be recalled that the Italian Macchi-Fiat seaplane had co-axial airscrews when it broke the world's speed record. The top speed of the FK.55 is stated to be 323 m.p.h., with a landing speed of 60 m.p.h. Armament consists of a canon on the engine, and two machine guns in the wings.

The Hanriot 220 twin-engined monoplane fighter, with two 450-h.p. Renault engines, is another example of the present fashion in fighting craft. It carries a crew of three in rather cramped quarters, and is said to have a speed of 310 m.p.h. with the Gnome Rhone small-diameter radials. The fuselage with a top wing is short, with tail controls that appear too small. The inverted engines project a long way in front of the wings, necessitating a long nacelle fairing backwards and upwards into the wings. The transparent cabin covering slopes up from the nose of the fuselage, and down again well behind the trailing edge of the wing towards the tail. Compared with the Fokker, it is difficult to

imagine that the Hanriot layout can avoid waste of power with the lumpy arrangement of body and nacelles, but this can only be proved by flight tests, which sometimes cause confusion in the wind tunnels. The Hanriot carries a gun in the shoulder of each wing, two canon in the bottom of the fuselage below the pilot, and a machine gun worked by the rear member of the crew.

An interesting high-performance fighter of the French Air Force is the Morane 405, with a Hispano Suiza canon motor of 860 h.p. This single-seater has done considerable flying, and was demonstrated at Villacoublay during the last week of the show, when its speed of 300 m.p.h. could not be doubted. Besides the 20-mm. canon there are two machine guns in the wings, pneumatically controlled.

The Mureaux 190 C.I. is a single-seater low-wing monoplane fighter with an inverted air-cooled Salmson engine of 450 h.p., mounting a canon, other armament consisting of two machine guns in the wings. The undercarriage is non-retractile, and the top speed is given as 306 m.p.h. Handling qualities are well reported, and the machine should make a useful interceptor type.

The Loire Nieuport 250 is a low-wing monoplane with a Hispano Suiza 14-cylinder two-row radial engine giving 980 h.p., and has a speed of 300 m.p.h. Armament consists of two canons and two machine guns mounted in the wings. This fighter is similar in performance to the Morane.

The Potez 63 is a twin-engined monoplane fighter, larger than the Hanriot. The crew of three are close together and protected by the conventional transparent covering over the cockpits. Though useful as a fighter, it is also intended for bomber or reconnaissance duties. The engines at present installed are Hispano Suiza radials of 680 h.p., giving a speed of 310 m.p.h. The alternative power plant is the flat Lorraine engine, which can be partially faired into the leading edge of the wings. The fuselage is slim and carries a tail plane having a pronounced dihedral with the fin and rudders flanking each end. Armament consists of two front canon in the bottom of the fuselage and a machine gun in the rear station. The Potez is considered to be one of the best machines of its type, and its performance with the flat Lorraine engines will be of great interest.

Two of Poland's well-known machines were shown : the P.Z.L. gull-wing monoplane fighter with a Gnome Rhone K.14 engine, and the P.Z.L.23 A, a multi-seat monoplane bomber with a Bristol " Pegasus " engine. These machines are not of the new vintage and, with fixed undercarriages and outside impedimenta, looked old fashioned, though their top speeds are 260 m.p.h. The fighter has a canon and a machine gun inside each wing.

Russia exhibited a long-distance monoplane, an air-liner, a glider,

and a low-wing monoplane single seater with a liquid-cooled engine M.100, of 1,000 to 1,200 h.p. The fighter A.N.T.35 carries four guns mounted in the wings, and in appearance resembles the Supermarine "Spitfire," though not in speed, which is given as 270 m.p.h. These machines showed that in general arrangement and ideas Russian engineers are up-to-date in modern practice, though technique is not of present-day standards.

Of the twin-engine bombers the Bristol "Blenheim," the Marcel Bloch 131, and the Breguet 462, demand attention, and, although not coming in the military class, the Amiot 341 twin-engined high-speed mail plane must be considered as capable of useful development for military purposes.

The "Blenheim" mid-wing monoplane with twin "Mercury" engines of 840 h.p. aroused great interest, since it is an accepted Service medium bomber of high performance, and modern in all respects. Though it did not look so sleek and streamlined as the neighbouring Amiot mail plane, the speed is sufficient to give modern chasers a busy time. The transparent nose gives an excellent view and provides room for a bomb-aimer, and front gunner. An amidships cupola houses the rear gunner.

In the heavy bomber class, the Marcel Bloch 131 twin-engined low-wing monoplane was a good example of workmanship and smooth surfaces which must contribute to the advantages of good streamline. The speed was given as 250 m.p.h., the engines being Gnome Rhone K.14 of 900 h.p. A canon position is in the nose, and the amidships gun position is provided with top and bottom stations. The test flights of the prototypes of this machine have given good results, and it may become a production type for the French Air Force.

Another heavy bomber with twin engines was the Breguet 462, with its deep fuselage and low monoplane wing. It is powered with two Gnome Rhone K.R.14 engines of 950 h.p., and has a speed of 250 m.p.h. In the nose there is provision for a bomb-aimer, and a canon, while the amidships gun position has top and bottom stations. The bomb load is said to be one ton. It was stated that the provision for sound-proofing was efficient, in spite of the large side surfaces of the fuselage.

Breguet exhibited two interesting models of future aircraft, type 730, a flying boat with four 1,000-h.p. engines, giving a speed of 200 m.p.h. and a range of over 3,000 miles. The appearance of this boat is similar to the Short "Empire" type, being a top-wing monoplane. The other model was of type 690, a monoplane described as a twin-engine escort machine, with engines of 650 h.p., giving a speed of 312 m.p.h. This machine should be an interesting development, if attention is given to streamlining and the use of buried engines.

Beauty of form, and speed, are merged in the sleek Amiot 341 twin-engined mid-wing monoplane. Flush-plated metal skin secured by flush riveting contributes to the fine external finish, which must be the result of considerable development of workshop technique. The Gnome Rhone K.14 (or Hispano Suiza engines) engines are fitted, giving a speed of 295 m.p.h. with a pay-load of 3,300 lbs. The position of the pilot is good; seated in an offset streamlined cupola he has an excellent view downwards and forwards, through the transparent nose. This machine will no doubt result in a new type bomber of great interest, and should be a good successor to the existing Amiot 144.

General Arrangement

In general arrangement aircraft design is becoming more uniform, the size varying according to the specified duties. Although a great deal of improvement in detail finish has yet to be made, two or three types showed that excellent results could be obtained by flush plating and flush riveting, but such work involves considerable development in manufacturing processes. The bi-plane has been ousted by the cantilever monoplane with its retractile landing gear, wing flaps, controllable pitch airscrew, and internal stowage of bombs. Fighters and bombers are twin-engined machines, there being a distinct similarity among the bombers regarding the deep and comparatively narrow fuselage. Development has been, and is being, forced by the political situation, hence the future progress of military aircraft should be instructive, particularly in regard to the size of the bomber types. Special reconnaissance and fighter machines are within sight of a speed of 400 m.p.h., while that of the immediate future appears to be about 320 m.p.h., with light bombers around the 300 m.p.h. mark. The range of the bomber class machines is increasing to such an extent that it will be possible to approach distant objectives by the most devious routes instead of by the straight there and back method.

The " service ceiling " is increasing, but operations at high altitude cannot be efficiently carried out by a crew rendered comparatively passive through lack of clothing and auxiliary equipment. No information was obtainable about sealed cabins for high altitude flying, although those who in the past have dismissed the scheme as impossible now think it probable. Difficulties in the operation of controls are often stated to be insuperable apart from the constructional difficulties; however, the inefficiency of wearing a suit akin to that of a deep sea diver when manœuvring a sensitive craft like an aeroplane is very great. The development of the submarine, and of the compressed air wind tunnel have solved problems in some ways similar in principle to those looming so large in the approach to the sealed cabin. In the case of the

compressed air tunnel, the investigator controls the tests on the remote aircraft model inside the steel shell by an electrical system, which takes care of the attitude of the model, and the measurement of the aerodynamic forces on the balance apparatus. If designers are sufficiently encouraged, and the qualities of constructional materials continue to improve, then the development of the sealed cabin should be within sight.

Gaining the world's height record has given our country prestige of great value, and it is to be hoped that as Great Britain returns to the forefront in the air it will win also the speed and distance records.

Accessories and Material.

Modern aircraft with their highly-developed engines have raised various problems in control, and with the ever-increasing range of duties the accessory manufacturers have been given wide scope for ingenuity, as was evidenced by their display—an exhibition in itself—which included everything from the controllable-pitch airscrew to the retractile tail wheel.

Although pneumatics, hydraulics and electricity play important parts in complex installations, the throttle lever with push and pull rods remains in many installations. A Hobson carburetter development which promises to be of value to the pilot is that of rendering the boost control and mixture control automatic, and dependent solely on movement of the throttle.

The conditions which cause the formation of ice in carburetters are becoming better known, and it has been realized for some time that it is essential for the pilot to have immediate warning of the trouble, so that precautions may be taken to prevent the rapid building up of ice, causing loss of power. A detection device under development consists of a small bleed hole in the carburetter choke, which when open preserves the equilibrium of a diaphragm, but as soon as ice crystals cover the hole, movement of the diaphragm occurs and brings an electric circuit into action, lighting a warning lamp and permitting the flow of alcohol into the carburetter until the ice has been removed. At the same time the pilot may control the carburetter heating.

On multi-engined machines it is frequently difficult to synchronize the speed of the engines simply by throttle adjustment : it was interesting to discover that the Bronzavia Company had an electrically controlled synchronizing apparatus which, it was claimed, would automatically keep the engines in phase. Bronzavia also showed a dust trap designed to exclude the finest desert sand without restricting the air flow to the carburetter ; it appeared so simple that it might be satisfactory.

Navigational instruments, cameras and wireless apparatus all showed minor improvements. Possibly the Standard new short-wave apparatus is of particular interest ; it is a two-way set for single-seater machines and weighs under 40 lb.

Materials of construction were well represented, especially the light alloys ; these have replaced most of the steel in aircraft design, and are exploited to the utmost in aero engines. Under " materials " must be mentioned the growing use of plastics of the " bakelite " variety. These synthetic resins in the transparent form replace glass with many advantages : in other forms they may be used for parts of the aircraft structure, such as ribs and covering for fuselages and wings. This material compares with wood in strength, so is not suitable for highly-stressed components, but it has advantages in weight, is resistant to weather corrosion, has a smooth hard surface, and it is cheap. Where laminated with fabric the strength is increased, and in this form satisfactory airscrews have been made and used ; however, the economy of plastic construction has yet to be proved.

Aero Canon.

The types of aero canons in use on the Continent are the Hispano of France, the Oerlikon of Poland and Czecho-Slovakia, and the Madsen of Holland and Denmark. There was much talk about canons and conjectures as to their value in aerial fighting ; possibly the spectral influence of the Fokker " Reaper," suggesting scything everything from the sky, lent colour to the arguments ; but if a fraction of the prophecies are correct, then the contests in the last War—Spandau and Parabellum versus Vickers and Lewis—were mere picnics.

Nationalisation.

The French aircraft industry is under the Government nationalization scheme, being organized into five *Sociétés Nationales de Construction Aéronautique* designated North, West, South-West, South-East and Central respectively, according to location. The organization will decentralize the aircraft companies now crowding the Paris area and place them in suitable groups throughout the country. This rearrangement will take some time and will need most careful planning to prevent serious delays in production.

Apart from the manufacturing aspect, which arranges for groups to make such types as may be allotted to them, the question of technical progress will be taken care of by various design establishments in charge of the leading technicians, who will hand over their designs to a board of production for allocation to a factory. The scheme is an interesting industrial experiment and should provide information on co-ordination that may be of value.

ROAD AND RAIL IN WAR

THE EFFECT OF AIR POWER AND MECHANIZATION

By Brevet-Colonel I. Simson, R.E.

IN the military, technical, and daily press of all countries, misgivings are frequently expressed as to the effect of air power and mechanization on the movement of an army in the field. The object of this article is to marshal well known facts, and to see if mobility can be maintained or increased not because of, but in spite of, the steady increase of our own mechanization of fighting units, increased use of heavy road transport, and the enemy's air power and mechanization. All nations have progressed and are progressing fast in these respects. The need for study of the effect of congestion and enemy interference on road and rail movement is therefore clearly indicated.

PART I.—TRAFFIC CONSIDERATIONS

It is perhaps worth noting that in peace time the capacity of railways and particularly near large cities such as London, New York, Paris, and Berlin, has been developed to a remarkable extent. During the two short rush-hour periods per day the following figures show what can be obtained regularly in each direction on double tracks :—

Type of railway.	*Trains per hour.*	*Average speed. Miles per hour.*
Underground electric railways	40	18
Main line suburban steam railways	24	21
Main lines, away from big cities	10–15	–

These figures could not be maintained for twenty-four hours without extra staff and rolling stock. They merely show what is the maximum for a very short period with good signalling, light trains, and passengers who can load and unload themselves in a few seconds at each stop. They thus have no bearing on the problem in war, when the conditions are entirely different.

In peace time, the long distance express passenger trains average 50 to 65 m.p.h. ; slower passenger trains from 20 to 50 m.p.h. ; while goods trains average anything from about 12 to 40 m.p.h. The fastest

to slowest rail speed is thus in the ratio of five to one. Moreover, where there are four tracks, two (one in each direction) are used for fast trains and two for the slower trains—since it is obviously impossible to run fast and slow traffic on the same track without loss of capacity and/or speed. If only two tracks exist (one in each direction), the faster trains are grouped as much as possible into one period of the day, and slower trains into another period.

The railway has been used in many theatres of war under widely differing conditions, and its capacity and limitations are fairly accurately known, though without the adverse effect of enemy air interference. Neglecting such interference, the experience of British, French and German Armies in 1914–18 in Europe, makes it possible to construct the following table of capacities of single and double track railways under average Continental conditions of train loads, signalling, etc. These figures may be considered as an " average " maximum, to be reached with careful organization, under Continental war conditions.

Military trains in each direction, per 24 hours.	NORMAL, *over long periods.*		INTENSIVE, *for short periods of about 10 to 14 days.*	
	Single lines.	*Double lines.*	*Single lines.*	*Double lines.*
In addition to civil traffic	8	24	12	36
With civil traffic practically suspended	12	36	16	48

These figures include the adverse effect of heavy train loads and entraining and detraining stations, railheads, etc., in the area of railway operation ; and also the factor of safety (four hours' pause per 24 hours, in the case of many German time-tables for large moves) to prevent delays becoming cumulative. With the certainty of air interference in a future European war this factor of safety is likely to be increased, thus reducing the above. For results—the useful train load and number of trains per day are what matters.

It will be realized that the actual maximum for a particular railway depends on many technical factors which differ enormously on various routes. What is probably a " world's record " is quoted in *Stratégie des Transports et des Ravitaillements* by General Ragueneau—1924. This occurred on the Creil-Amiens double line during the race to the sea in October, 1914. Excluding any factor of safety allowance, and without the adverse effect due to proximity of railheads, etc., the French " Nord " passed 135 trains per 24 hours in each direction, against

86 allowed for as peace time maximum on the same section. On 6th June, 1915, the Germans made probably an even finer performance on the Krakau-Tarnow-Jaroslau double line. Despite four bridges which which were only open for single line working, 82 Eastbound and 84 Westbound trains were passed in 24 hours. Thus the "average" maximum can be surpassed with a special effort in specific cases; nevertheless it forms a useful starting point for consideration of rail movement. Where large scale lateral troop movements cut across the main line of supply to the front, the "average" maximum may be reduced to two-thirds or a half of the above figures, as occurred in France in September–October, 1914. In war, fast and slow rail traffic to and from each area must use the same tracks because the number available is usually limited. The slow trains thus average 10 to 15 m.p.h., and if paths can be found, the faster ambulance and leave trains may reach say 25 m.p.h. The fastest to slowest rail speed in war is about two to one, compared to five to one in peace.

Railway Traffic Principles.

From the foregoing facts, well known traffic principles can be summarized before considering road traffic—to which the same principles will also clearly apply:

(*a*) Vehicles of widely different speeds must run on different tracks—otherwise they obviously all tend to reduce to the speed of the slowest. If different tracks do not exist, group fast and slow traffic at different times of day, as much as possible.

(*b*) Doubling a single width route, trebles its traffic capacity in each direction. A single width route in practice is often used in only one direction, if traffic can return by a different route. In effect this is a widely separated double track and capacity is trebled without new construction.

(*c*) But doubling a double track, only doubles the two track capacity. (Four tracks thus carry double, and six tracks carry treble, the traffic of two tracks in each direction).

(*d*) Streams of traffic preferably should not cross each other on the level, since if one is late, it delays others. Hence the increasing use of "flying junctions" at great cost at busy points on railways—and now on main roads.

(*e*) Routes in war are usually more crowded than in peace, resulting in a reduction of the fastest to slowest speed ratio.

Road movements in a theatre of war fall broadly into two categories: (*a*) Movements from rear to front of supplies, ammunition, reinforce-

ments, etc., the mechanical transport mostly returning empty. (*b*) Lateral movement of troops from one flank to the other, to meet or develop a new tactical or strategical situation. Mechanization will probably increase such traffic at short notice.

Both types of movement are likely to be intensified and speeded up under modern conditions. The average speeds and economic daily mileages are given below approximately for some of the various road users :

	Unit.	*Speed including halts. Miles per hour.*	*"Economic" Journey per day.* *Hours.*	*In miles.*
Infantry	Men marching	2½	6–7	16/18
	In Troop-carrying Company R.A.S.C.	18	6–9	108/162
Cavalry	Divisional	5	6–7	30/35
	Armoured Cars ;	25	7–9	175/225
	Mechanized Cav. Brigade	15	6–9	90/135
	Motor Regts. ;	20	7–9	140/180
	Light Tank Regts ;	15	6–9	90/135
Artillery	Horse and Field Mechanized	12	6–9	72/108
	Medium	8	6–9	48/72
Tanks	Tank Brigade	8	6–9	48/72
	Light Tanks	15	6–9	90/135
	Medium Tanks	8	6–9	48/72
	Army Tanks	10	6–9	60/90
Lorries	In column	12	6–9	72/108

The fastest to slowest road speed is thus about ten to one—a divergence far greater than exists on the railway in peace (five to one), and in war (two to one). This high divergence is suggestive of the loss of effective speed of the faster vehicles which may occur in war on crowded roads unless special efforts are made. For long distance moves, apart from the wear and tear on man and machine, the daily distance travelled per 24 hours by road is about one-third to one-half what the railway can be expected to do, viz., about 250 miles excluding entrainment and detrainment.

The Analogy between Road and Rail.

The anology between road and rail traffic requirements is remarkably

close. In peace time, as road traffic has increased, railway methods have been and are likely to be adopted more and more ; not only with the idea of reducing accidents but of allowing the more important line of traffic to develop its potential speed. This latter aspect has been largely obscured by the " Safety First " movement to which modern road developments are usually ascribed.

The following may be cited as examples of applying railway practice to roads in peace time :

(*a*) Coloured signals at cross roads :—These really spread the time lost in standing, on a traffic basis. The busier road has a longer green and shorter red light.

(*b*) Specified Pedestrian Crossings :—Not only to protect the pedestrian, but to avoid delay to vehicles by " jay walkers " crossing anywhere.

(*c*) Fast and Slow Tracks :—For vehicles and separate cycle and pedestrian tracks, where roadways are wide enough.

(*d*) Road junctions (England) :—Sharp corners for the minor road so that traffic entering the main road *must* slow down. This reduces delay to fast main road traffic and throws it on to the slower traffic.

(*e*) " Flying Junctions " (U.S.A., Germany, Italy) : no minor roads coming in on the same level. This improves on (*d*) above and avoids delay to minor and main road traffic.

(*f*) Easy grading and curves (approaching railway standards) of new main roads for heavy haulage at speed.

(*g*) Strict time-tables :—Start to stop and for intermediate passing points, introduced by all the heavy road-haulage companies. Much night operation, i.e., when the roads are comparatively free of fast moving traffic.

At this stage, it may be of value to mention that Germany has been developing her *Autobahnen* (motor roads) on these lines to such a remarkable extent, both as regards quantity and quality, that she has frightened many neighbours, (e.g., Holland). It is interesting to note that in March, 1936, on the Frankfort–Heidelberg new road, some world's car records were broken on a wet day, for all distances up to 100 miles inclusive. The average speed for 100 miles was 166 m.p.h. Bends, grading, and surface must thus be perfect ; and such roads are capable of forming complete alternatives to the railway up to her frontiers in case of war. The surface is reinforced concrete capable of heavy mechanical-transport axleloads, with bridges to suit. With the multiplicity of new main roads and her existing railways, Germany's lines of communication from the interior to frontiers, and laterally

behind frontiers, are being rendered as safe from air attack as it is possible to make them; and will give her tremendous speed of concentration at any point. Construction is helping to solve her unemployment problem meanwhile.

If, therefore, the potential speeds of the faster road vehicles in the above table are to be made available in war, traffic technique requires developing, concurrently with progress in mechanization. Otherwise when mechanization is complete and units are at full war strength, congestion in Divisional and Corps areas may result in only a fraction of the speed of the faster vehicles being obtainable in practice—as has in fact happened on railways. On railways, the problem in war becomes practically insoluble because tracks are so few; but on roads, which are invariably far more numerous than railways, the problem should usually be soluble with careful and detailed application of the various traffic principles already mentioned.

Road traffic obviously can never be controlled centrally like railway traffic. On a railway, once a train has reached a siding (cf. the units transport lines, stores dump, etc.), it often may not emerge on to running lines again (cf. the road network), without permission of the Control Office (cf. Division or Corps Staff), covering that particular area. But in war, the unit must send its own transport of varying speeds out daily under unit arrangements. Formation H.Q. clearly cannot control this in detail, and at times unit transport may cause difficulty. The Staff can only issue orders for certain roads to be left clear for special moves between certain hours; or perhaps issue a time-table for busier roads showing hours available for units use, and hours available for all those normal or special moves which are directly controlled by Formation H.Q. In war games, only the larger moves are usually considered, though the road in question in practice might already be well loaded with the transport of many units, going about its lawful business. On manœuvres the situation is unreal because units and their transport are not up to war strength. Something smaller but on the lines of a Railway Traffic Control Office may thus be required for roads in war. Much can be done to develop technique by experience with schemes in peace. Breaking up long road convoys by letting small units or individual vehicles move in their own time—as in civil traffic—may reduce congestion and danger from air attack. But even such development must require some degree of higher control.

Siting of Railheads.

A point which has struck the writer repeatedly in exercises recently is the tendency to keep railheads very far back (60/80 miles). Mechanical transport can admittedly operate long distances in front of railhead;

but it is certainly not economical to do so. The railway is a far more economical transport agent than the road, as regards personnel and "track" and vehicle maintenance required per ton mile. The capacity of mechanical transport to supply over such long distances should be husbanded and only used when it is really wanted owing to the tactical situation or when the railway has been put out of action. It is therefore suggested that all railheads should normally be pushed forward to the limit of tactical safety, normally just out of enemy's medium artillery range, or even well within it for certain stores. This seems to have the following definite advantages:

(*a*) Saving of mechanical transport mileage; less wear and tear on personnel, vehicles and roads; less petrol consumption; less strain on repair workshops; conservation of mechanical transport and roads generally, till their full capacity is really required.

(*b*) By grouping railheads where possible, within 30 miles of the front, defence is simplified against enemy aircraft and armoured fighting vehicles. Defence becomes more difficult if railheads are widely scattered and 60/80 miles back, both for the railhead itself and the mechanical transport columns working therefrom. It will be impracticable to make a very long open flank secure against ground raids.

(*c*) A mechanical transport column on the move is probably more vulnerable than a train to attack by aircraft and armoured fighting vehicles. A train carrying 500 tons of useful load occupies under ¼ mile; the mechanical transport column handling this tonnage will occupy 2½/3 miles of road space. The column cannot usually be warned in useful time of an enemy ground raid from the flank, though aircraft control of road traffic may come in time by rota aircraft, as for Derby Race Day traffic. The train has more chance of being stopped in time by the station to station telephone along the line before it meets trouble. In any case the destruction of a mechanical-transport column may often prove more serious than the loss of one train.

(*d*) Provided the more important stations, water supplies and bridges—over and under the track—are reasonably protected, a ground raid can seldom do serious damage to the railway track or roadway.

(*e*) It is to be expected that air attack in future will cause sudden and frequent changes of railhead. If a forward railhead is severely damaged, it can be changed to a station

further back at short notice. But if it is already 60/80 miles in rear and is heavily bombed, that railhead can only be thrown further back, with still greater strain on mechanical transport, since it cannot be moved forward until the railway is repaired. The extra 40/50 miles involved is but little operational disadvantage to enemy aircraft for a rear railhead; or to the Transportation Service for a forward railhead.

(*f*) With railheads forward, lateral moves of mechanized units will be simplified and accelerated in many cases; and not the reverse as one is apt to think at first.

(*g*) The number of anti-tank harbours will be reduced.

The apparent congestion arising from pushing everything forward is considered more dangerous in theory than in practice. Enough depth and more flexibility should still remain available for safety even in mobile warfare, provided stocks are kept to a minimum at forward railway/road transfer points. The French and Russian fronts in 1914/18 showed that railways can continue to function satisfactorily quite close to the enemy. The " forward " railway policy thus seems worth trying until the opposite is proved by experience.

In national life, the railway and the road have become serious competitors for many goods. They are frequently at loggerheads and Government has had to devise machinery to hold the balance between them. In war there must be none of this attitude. It is essential to realize that road and rail are not competitors but are mutually complementary. Each can form an alternative or act as a reserve for the other. It is to be noted, moreover, that the Staff control both; that the technical working of the railway (and inland water transport) in all departments is in the hands of the R.E.; while the technical working of the " road " is split up between the unit, R.A.S.C., R.A.O.C., and R.E. for road maintenance. This is at first sight an extraordinary division of responsibility for road traffic. Nevertheless, the organization has grown up, stood the test of war, and is likely to remain permanently —or at any rate until and if a separate " Transportation Corps " is ever again under consideration. If and when such consideration is given, there will be ample time to consider amalgamation of road and rail transport services. Such amalgamation is not being advocated, but it is to be noted that the previous decision to form no special Transportation Corps considered only railways, inland water transport, and construction of roads. It apparently did not consider mechanical transport, mechanization, and the resulting traffic problem; and the increasing threat to road and rail from the enemy's air power and mechanized forces.

Conclusions—Part I.

As a result of traffic considerations, the following points are worth summarizing as recommendations:

(*a*) Greater attention to be given to training for Staff and R.A.F. road traffic control so as to obtain in practice the inherent speeds of mechanized and motorized units.

(*b*) Detailed study of the effect of forward railheads under modern conditions, and of the use of railway rather than road wherever possible for economy.

(*c*) A firm line as regards any competition that may tend to develop between road and rail in the Army.

The first two points can be covered at war games, administrative exercises, and manœuvres.

PART II.—ATTACK AND DEFENCE

In considering attack and defence of roads and railways on the lines of communication, it is proposed to examine first the points which it will pay best to attack; and then the "passive defence" of our own vulnerable points, so as to minimize the dislocation of traffic. By "passive defence" is meant methods excluding the use of our own R.A.F., anti-aircraft guns and searchlights, or troops armed with more than rifles and machine guns. Important areas such as docks and depots clearly deserve more than "passive defence," which however can be applied to many such areas in addition to other military or R.A.F. defence. A railway usually gives more points for attack than a road and will be considered first.

A railway system is like a steel wire rope, which tows the paraphernalia of war from the factories to the home port and from the base port overseas up to the front. In a crane lifting its load, the steel wire rope consists of a large number of strands each of which carries so much load. If the rope consists of say 50 individual strands, and you cut ten of them, the crane is still capable of lifting approximately four-fifths of its original capacity. A railway also consists of a large number of Departments, or "strands," all of which may be necessary for efficiency, but some of which are absolutely vital. The vital strands are as follows and include the operating personnel, material, and plant under each head:

(*a*) *Track*: Including bridges over and under the line; junctions; and signal boxes for certain important junctions.

(*b*) *Locomotives*: A scattered target; concentrations exist in the main repair shops, and individual loco. depots up and down the line.

(*c*) *Fuel Supply*: Including the fuel stocks and system of coaling locomotives; all this is concentrated in the loco. depots.

(*d*) *Water Supply*: Located in loco. depots and at large junctions. Also frequently (in hot "dry" countries) at lonely unprotected spots where locomotives must take water if they are to reach the next watering point. Water points are far more numerous than fuel points. The vital pumping station is often in a lonely unprotected spot, away from the railway even in Europe.

(*e*) *Rolling Stock of all sorts*: A scattered target; concentrations in the main carriage and wagon shops, marshalling yards, goods yards at large stations, and docks.

NOTE.—It will be seen that fuel and water supply are really sub-strands of the main strand of locomotive power.

These five are the only really vital strands. When considering damage, however, the analogy between railway and crane rope ends abruptly: if any *one* of the above strands is cut, the railway is paralysed and can carry *nothing* until that particular strand is repaired, even though all the other strands may be perfect. There are, of course, other important strands in the make-up of a railway, such as the Control or Operational Offices. But these are usually small targets which aircraft might have great difficulty in locating and hitting, and which a ground raid could seldom reach at all. In European countries such small targets can be physically protected by bomb-proof roofs, etc.; or arrangements will be made for decentralization in war. For example, the Cologne Headquarters, which normally controls over 1,000 route miles of railway in peace, may in future be decentralized owing to the risk of air attack. Of these five vital strands the effect of cutting track, fuel or water is practically immediate and complete, provided two or three *consecutive* fuel and water points on a line are put out of action. The effect of attacking locomotives and rolling stock cannot be immediate nor complete—because they are scattered all over the line—but it often becomes cumulatively effective quite soon. An excellent example of the possibility of cutting one strand to cripple a railway stands out from Lawrence's book "The Seven Pillars of Wisdom." For the reasons he gives, Lawrence led the Arabs to attack culverts, bridges, and lonely portions of track on the Hejaz Railway. He could seldom risk deliberate attacks on defended stations, where the fuel and water points were situated. It seems certain, however, that aircraft attack on such fuel and water points, repeated occasionally, could, if necessary, have kept the Hejaz Railway permanently out of action at a very small fraction of

the total ground effort made by Lawrence for other reasons.[1] On the Hejaz Railway—and in many similar cases—locomotive fuel (wood or coal) has to be hauled hundreds of miles, and stacked for use at loco. depots along the line—a favourable target for the incendiary bomb. Water points are few and far between and often inadequate in quantity and quality of water. The locomotive is a heavy drinker and may require about 2,000 gallons every 25 miles (say one to two hours). High-level tanks and pumping stations are often easy and good targets for aircraft. Improvised water supplies—apart from the question of the large quantities required—often mean unsuitable water for boilers, with resultant troubles and reduction of train loads and traffic capacity.

Principles of Attack.

The principles of attack on railways by air and/or ground raid are thus :—

(*a*) Obtain the advice of the Transportation Service as to which strand is the weakest : the great importance of their possessing accurate and up-to-date transportation intelligence for any particular railway or group of railways will be realized.

(*b*) Attack that strand at the most effective points (again as advised by Transportation), and repeat the attacks at those same points while repair is in progress. In other words, " keep the wound open."

(*c*) When repetition attack at uncertain intervals (two to six hours) becomes uneconomical, by day or night, owing to the enemy's defence at that point, shift the attack geographically, *but always on the same strand*, elsewhere along the same line, or on parallel or lateral railways. It is best on any one strand to arrange several cuts in series a few miles apart. This isolates some cuts and delays the arrival of repair personnel and material.

It is suggested that each air attack should be given two or even three alternative targets in order of priority on the same strand ; also perhaps one chance target. In this class of work against railways, heavy air casualties seem normally unjustified, since the desired result can still be achieved by shifting the attack elsewhere at very short notice, even by the particular Sortie Commander. It is seldom that one railway pin-point is vital, and worth attack even at the cost of heavy

[1] Lawrence said himself that he did not want to put the railway permanently out of action. His plan was to allow the line to keep just working so as to immobilize for its defence the greatest possible numbers of Turkish troops.—Editor.

air casualties. Varying the geographical point of attack on the same strand will make the enemy's defence and immediate repair harder, because (*c*) involves further moves of repair personnel and material, whereas (*b*) does not. It is important to note that attack on any particular strand includes all the personnel and material of that strand. Hence the importance of *keeping the wound open* during repairs, because repair gangs may have casualties, or have their morale shaken, and rest curtailed owing to excessive work. For example, if track is the objective, repeated attack during repairs, when platelayers are present, means less of those skilled men available for future repairs on account of casualties or because they will turn out with less zeal next time. Civilian railwaymen are organized in rigid and narrow compartments. Thus a shortage of platelayers cannot be made good by employing engine drivers, guards or workshop trades—except as unskilled labour—as such trades have no knowledge of platelaying. In fact, none of the key railway tradesmen—drivers, fitters, platelayers, signalmen, etc.—are interchangeable in civil life. It is the civilian personnel (mobilized) on whom all countries really rely to run their railways in war. The regular military railwayman may have some knowledge of railway trades other than his own, but he is numerically weak in all countries. Thus by hammering away at one strand the provision of personnel and material for repair of that strand is likely very soon to become a major difficulty. So from all points of view, the policy of attacking one strand continuously, but possibly at different points geographically, obeys the principle of economy of force. For a given effort, it will bring better results than dissipating it over what may be several strands and more obvious and spectacular targets.

In a European war fuel and water will seldom be worth attack, although they may often be the weakest strands in other lesser developed areas of the world. In Europe, the railway network is usually considerable. This means a large number of fuel and water points at loco. depots and the larger stations. The larger towns and junctions are likely to be defended, so that attack on these two strands may prove costly to aircraft, and impossible for ground raids. There remain the track, loco. and rolling stock strands. The principle of attacking only one of these, still holds good ; but attack on all three may at times be essential especially in the early stages or concentration period of a campaign—when delay of the enemy's concentration is everything ; since British concentration on the continent must necessarily be slower, for geographical reasons, than that of an enemy. Electrification of railways near Continental frontiers proceeds very slowly, because the power house strand will always be a weakness in war.

In considering attacks on track, the obvious places are railway defiles. For centuries, a bridge has been considered a defile. Road bridges are far more frequently defiles than railway bridges, because all the roads on either side close in and cross the obstruction (river, marsh, valley, etc.) by the bridge and then " fan out " again. But take the map of any country, and you will find the railway does not do this, except where the bridge is an exceptionally large and expensive one—such as those across the Firth of Forth, and some of the Rhine bridges. Normally over such rivers as the Thames, Meuse, Somme, and the Upper Danube, the railway bridge is not a defile. There is no more railway traffic over the bridge, than there is over the track for many miles on each side of that bridge. A railway defile is thus not often a bridge, but a point where several railways close in and where there may be two or four tracks for a few miles in order to carry the concentrated traffic, before the lines diverge again. It follows that a railway defile is more often found in easy, rather than difficult country, in which the military defile usually exists. The sole object then of attacking the railway bridge is, that it takes longer to repair. The Transportation Service can again best advise which railway defiles to attack, and the more effective pin-points on such defiles, as they often extend for a few miles. Such points will seldom be accessible to other than air attack. Likely points are junctions, certain bridges on double or quadruple tracks, each end of important marshalling yards, or regulating stations where large concentrations of rolling stock (loaded and empty) will usually be found waiting for re-routing. These points are usually more effective than railway stations themselves. Large marshalling yards, particularly on the up-traffic (or loaded wagons) side will often give good results. Destruction of their exits to the main line may trap much rolling stock, which if derailed involves still further delay. Repetition attacks will " keep the wound open " and accentuate the difficulty of repair. Attacks on the main lines are often more effective some miles from the larger stations. This makes it easier for the aeroplane ; while enemy repair gangs, special plant and material have to be called out and come from some distance—all increasing delay.

A word on the derailment of moving trains. Some authorities consider these are " chancy " targets and not worth while for the airman. The writer disagrees. The airman has a wide range of vision, and can often afford to wait a few minutes till his target is in " the ideal spot " for attack—when results may be very well worth while, as regards delay to traffic. In 1917, a low flying German aeroplane dropped one small bomb just in front of a moving train near Abbeville, on a long low brick arch bridge. The bridge was undamaged, and the crater in the track was very small, but sufficient to derail and pile up

the train. This double line took nearly 24 hours to clear. On the other hand three heavy shell craters and one large bomb crater in a main double line near Poperinghe took only just over four hours to repair in the dark one night in 1917. All four craters were large ones about 18/22 feet diameter, so that the very great advantage if a train can be derailed into a crater is apparent. It is only fair to add that the Poperinghe repair gangs were exceptionally quick as with constant practice the local organization and speed of repair was good. In the concentration period, moreover, trains are more likely to contain personnel than stores; thus doubly worth attack. The ideal spot for derailing a train is therefore in a cutting and on, or just at the commencement of, any bridge. The derailment may wreck the bridge itself (as has occurred in China and Mexico), but the real point is that in such places side space is restricted and no large repair gang can work. Wagons can only be moved one by one from each end of the wreck and this is what takes the time. (For the same reason an arranged derailment or collision in a tunnel takes a long time to clear.) If derailment is on an embankment or on level ground, engine and wagons can all be worked on simultaneously by a large gang and thrown down or sideways clear of the track which is thus opened to traffic very much quicker. Derailment causes damage to three strands—track, locomotive, and rolling stock. Thus it is suggested that if a train is on the line required to be cut by that raid, the Air Force should be permitted, if not ordered, to take on such targets as offer, when at "ideal spots," between specified stations. Train wrecking, and in fact all track demolition, is more effective far away from large stations (where repair gangs are stationed) and timed just before dark to make matters more difficult for repair parties. Flares and lights may make it easier for the second air attack, which is "keeping the wound open," to find the site in the dark hours, as repair work is impossible without lights on a dark night. It is suggested that the Air Force should also take any chance that offers of attacking breakdown cranes, steam-diggers or pile drivers, at work or standing on sidings. Such machines are few in number, and have an output of work which is worth from 300 to 1,000 men each. Putting such machines out of action is certain to cause future if not immediate delay—but direct hits are essential.

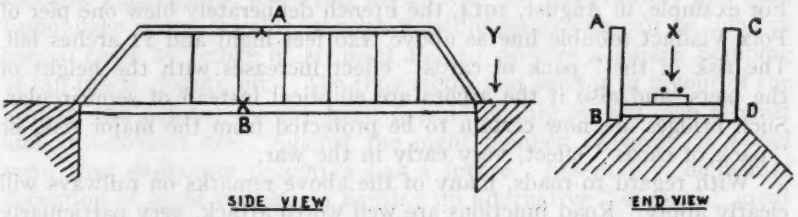
Attacks on Bridges.

Road and rail bridges fall into three main categories, viz.:

(*a*) Steel girder bridges of all types.
(*b*) Reinforced concrete bridges.
(*c*) Brick or stone arch bridges.

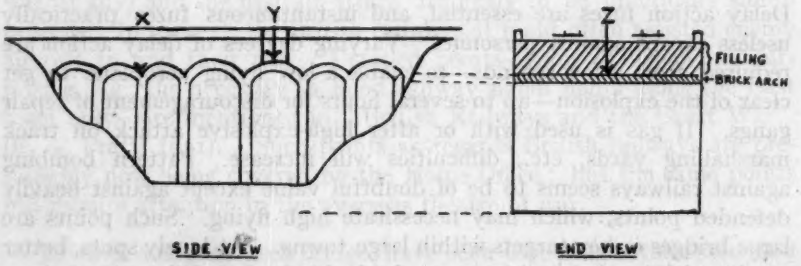
Of these (*a*) and (*b*) are extremely hard to damage seriously by air

attack; in fact, they require careful thought and ample time and explosive to bring down by ground troops with certainty, owing to the troughing or reinforcement under the roadway.



On the Hazebrouck—Merville Railway, in 1918, a single line bridge as above was prepared for demolition with charges at A, B, C, D. Charge A was exploded prematurely by a direct hit from a German shell, and completely cut that compression boom. The bridge only sagged slightly that side. To be certain of felling a bridge, a bomb not only requires a direct hit on a main boom, but it has to be a tension boom (*B* or *D* above)—which is practically impossible for aircraft to obtain. A bomb in the track at *X* will do little more than crater the roadway or track even in the middle of the span. Blast and splinters have little useful effect on steel and reinforced concrete girders, as was proved by the longevity of girder bridges and of the steel skeletons of mine buildings in 1914–18, under shell fire in the Lens–Bethune area. A heavy bomb at *Y* might be lucky enough to blow out the masonry abutment and drop that end of the bridge. Most officers consider that air attack intended to fell large steel and reinforced concrete bridges is not worth while. The effect will often cause little more delay than attacking the road or rail each side of the bridge. This, of course, does not preclude attacking any bridge which also happens to be a defile.

Brick and stone arch bridges are far better targets because susceptible (if less than buildings) to cracking and the effects of blast and splinter.



A heavy bomb anywhere on the bridge centre line *Z*, hitting at *X* or *Y*, and bursting in contact with the main arch, might well blow

out the top of a pier or one arch ; and then, owing to lack of mutual support, several arches might fall in succession, like a pack of cards. This effect was most noticeable during the late war in many bridges. For example, in August, 1914, the French deliberately blew one pier of Poix Viaduct (double line as above, 120 feet high) and 11 arches fell. The risk of the " pack of cards " effect increases with the height of the piers, and also if the arches are elliptical instead of semicircular. Such bridges are now certain to be protected from the major risk, or " pack of cards " effect, very early in the war.

With regard to roads, many of the above remarks on railways will clearly apply. Road junctions are well worth attack, very particularly in towns and villages where bombs which just miss will blow buildings into the roadway and block it. Points where road and rail are parallel and close together are defiles in the transportation sense, and what misses one may damage the other. The Germans applied this principle between Poperinghe and Ypres.

A bomb carries more explosive than a shell of equal weight, so that the effect on railway and road is greater, weight for weight. Only direct hits are of any use. Misses by a few feet are useless owing to the solidity of road and rail construction. For cratering, it is suggested that bombs should normally be betwen 112 to 250 lbs. This is, of course, an Air Force matter, but this size will give ample crater effect. From experience, the writer considers that more medium craters, in series, cause more difficulty that fewer larger ones. The 500 to 2,000 lb. bombs against road and rail are thus only recommended for masonry arch bridges where increased concussion is required to assist the " pack of cards " effect ; or for cross-roads in towns, for blocking the road with house debris. The Germans, however, stress the importance and moral effect of large charges against the personnel (e.g., repair gangs). For material damage, the bomb must penetrate before bursting. Road and railway surfaces are hard, and the use of semi-armour piercing bombs appears advisable to avoid possible break-up of the case on impact. Delay action fuzes are essential, and instantaneous fuzes practically useless except against personnel. Varying degrees of delay action are required, from a few seconds—to enable a low flying aeroplane to get clear of the explosion—up to several hours for discouragement of repair gangs. If gas is used with or after high-explosive attack on track marshalling yards, etc., difficulties will increase. Pattern bombing against railways seems to be of doubtful value except against heavily defended points, which may necessitate high flying. Such points are large bridges or key targets within large towns. At lonely spots, better results without undue risks seem obtainable by low flying attack (e.g., the German effort near Abbeville).

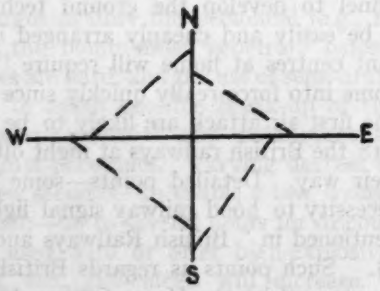
Passive Defence against Air Attack

Trains and road convoys will presumably require arming with machine guns against low-flying air attack. By day, railway and road camouflage is not feasible, though possibly something can be done in special cases by smoke or artificial fog to prevent accurate bombing of rail heads, depots, etc. The time factor and wind is in favour of the airman and defence by day must depend mainly on our own aircraft and anti-aircraft fire. Against the night bomber, however, it would seem that deliberate deception has a future. Essentially, deliberate deception at night consists in lighting up alternative " dummy " areas in turn one half to three-quarters of a mile away from the real area where work continues under shielded lights or artificial fog, while the bombs should fall harmlessly in the " dummy area." Arrangements will presumably have to be made to start false fires and smoke—and also to fool the enemy reconnaissance machine next day. The principle was used in the late war with definite success, but on a small scale on the initiative of individuals for the protection of their own area, rather than generally. It is known to have been studied since the war in Germany, France, Poland and U.S.A., but there has been a silence in the Press for some years which may denote success or failure. Such deception at night is not practicable in juxtaposition to water—the light from rivers or coast line prevents it ; but otherwise it seems to be of very wide application, not only for railheads, marshalling yards, depots, and important centres on road and rail in the theatre of war, but for factories, etc., at home. Whether it will always be possible to fool, or to continue to fool, modern aircraft is doubtful, but the method promises some success. Co-operation between night bomber and ground personnel to develop the ground technique thus seems desirable, and can be easily and cheaply arranged in some areas. If successful, important centres at home will require " passive defence " on these lines to come into force really quickly since the declaration of war (if any) and the first air attack are likely to be practically simultaneous. In 1914–18, the British railways at night often assisted enemy aircraft to find their way. Detailed points—some of which are surprising, e.g., the necessity to hood railway signal lights along the East coast only—are mentioned in " British Railways and the Great War " (E. A. Pratt, 1921). Such points as regards British railways are presumably now being covered by the Home Office ; but the same points will require attention in the overseas theatre of war.

Brick or masonry arch bridges have been used longer than steel and reinforced concrete. Ports of embarkation in the United Kingdom, and possible base ports overseas, thus have many such bridges leading inland,

both for road and rail, over the river valley on which the port is usually sited. The risk of a major breakdown on the lines of communication is therefore a serious one. All such bridges can be strutted with timber from arch to arch near the springing in order to prevent the " pack of cards effect." This precaution was not taken in France till 1917 (e.g., Wimereux golf links bridge ; Boulogne). The work can be done by any contractor and it is considered of first-class urgency both for the United Kingdom (where it could be incorporated in mobilization schemes) and overseas as soon as advance parties land at the base port. Many trunk railways in Great Britain have such danger points. The span of steel, etc., bridges (e.g., across canal and towpath) can often also be reduced effectively by timber trestles arranged so as to take the weight only if the bridge sags slightly. This precaution may avoid a " major accident " some day, and was also applied in 1914–18.

The surest defence against serious cutting of the lines of communication is to have a multiplicity of alternative road and rail routes, from base to front (cf. Germany). In practice this can seldom be achieved in war, but safety can be greatly increased by road by-passes round big towns, or by constructing short avoiding lines round dangerous railway defiles, such as those at Arras, Poperinghe, Hazebrouck, etc., in 1916 and 1917. They were then built primarily for traffic reasons, but they will now be necessary for air reasons. An insurance, which may prove worth while at really important cross roads, will be to cut the corners where possible by short new construction (100 yards each ?) as shown below (dotted) ; this will give three possible routes in each direction, and it is unlikely that all will be cut simultaneously.



To cut North-South and East-West traffic now requires at least three hits instead of one for a simple cross road. As a rule, in towns if not villages, such alternative routes already exist round blocks of buildings.

Defence from Ground Attack.

It will be necessary to protect the front few miles of each flank with ground defence (road blocks, anti-tank mines, etc.), against flank ground attack. It will, however, seldom be possible to carry such flank defence back long distances. Open flanks can perhaps best be watched by aircraft and by armoured cars; but if the raider starts tip and run operations a special force may have to be sent out to deal with him as in naval warfare; to which mechanized land warfare must, as regards tactics, approach more and more. In a recent exercise the Divisional R.E. were required to put down road flank protection, consisting of anti-tank mines on roads not required by our own mechanized forces. On certain roads, which might be urgently required by our forces, staggered barricades were constructed. Each anti-tank mine block was sited and laid by the R.E., who then went forward leaving behind a small party of infantry with rifles only to cover each minefield. This was purely a defence against armoured cars, *not* tanks. The infantry parties were to lie concealed and well spread out, and only one rifle at a time to pick off the enemy when he dismounted from the armoured vehicle. There was thus no offensive power, merely " passive impassability." The barricades were more strongly held with anti-tank guns and light automatics. On the first day's march, 28 blocks in 20 miles were so formed; on the second day 25 blocks in about 14 miles. The latter figure of say two blocks per mile of flank is probably a fair average. Provision and control of scattered personnel (infantry more than R.E.), stores and transport for this sort of work is always difficult and it is certain that flanks cannot be guarded in this manner indefinitely to the rear. It is suggested that the limit should be about 20 miles. If the flank of an advancing army, within range of enemy ground attack, is to be protected in this manner, two units might be formed temporarily (from R.E. and infantry) each capable of forming and manning 40 blocks in about 20 miles.

If unit A prepares and mans the blocks for the first day's march, unit B will do likewise on the second day. In the afternoon of the second day, unit A will pick up the mines, come forward and be ready to repeat the duty on the third day . . . and so on. So with two units a minimum of about 20 miles of flank will be guarded each night, and rather more for most of each day. Three such units would protect about 40 miles at night. Each " unit " involves about a company of infantry which is only obtainable by reducing the fighting strength of a brigade. The effect of the enemy's mechanization and air power in fact calls for far more infantry requirements in the back areas. It is for consideration whether the establishment of Corps and Divisional Head-

quarters should not be increased by what will virtually be a Pioneer Battalion, to deal with the construction and manning of points requiring local defence. Many such items will now be required in back areas in a campaign—anti-tank harbours, bomb-proof and gas-proof shelters, road blocks, etc., for which R.E. will require assistance in construction, and which they cannot man without detriment to other R.E. work. As regards Royal Engineers, the scope of work of Field Coys. and Army Troops Coys. is rapidly becoming practically the same. Bringing these two types of units on to identical establishments, will give interchangeability and many other solid advantages.

At the same time, the anti-tank mine is a new weapon, not yet used in war. The writer feels that armoured fighting vehicles if faced with a minefield only under rifle fire, will soon find a way through if not round. Unburied mines will probably soon be able to be swept clear from the vehicle; or perhaps exploded if buried, by means of point blank rifle fire from within the armoured fighting vehicle as the mines are not powerful enough to do damage unless exploded literally in contact with a wheel or track. Experiment on these lines seems desirable. Passive defence of a minefield by rifles only will thus seldom achieve much and may in fact engender a dangerous feeling of safety. The anti-tank gun with its offensive power seems to be the essentiality. The land mine like the naval mine will only cause casualties to the unlucky or careless, once the technique is fully developed by both sides; and the land mine can seldom be as completely concealed as the sea mine owing to lack of time.

If a road or rail is suddenly blocked, traffic will bank up; in fact the effect will be like a " flick " to a rope which may travel right down to the far end, a hundred miles away or more. It is scarcely worth cutting a road and rail if the traffic will only be delayed say two or three hours. There is, however, certainly an economic length of block on the railway beyond which the airman or ground raider gets compound interest for his effort, owing to the resulting complications. When trains are suddenly and unexpectedly stopped the difficulties pile up: personnel and mechanical transport will be waiting to offload trains which do not arrive, and they may not be there when the train does ultimately arrive; empty trucks will be late in starting back to the base; later still depots will be short of empty-trucks; if the original delay is over, say three to four hours, engines caught at non-water points with half-empty tenders may run out of water; fires may have to be drawn so they won't be able to move when wanted to; train crews, if on duty for 16/20 hours at a stretch, must fall out of the duty roster next day; and so on *ad infinitum*. The " compound interest " accrues rapidly for any railway block in excess of a certain critical period,

which the writer puts at about four hours. Here is another reason for keeping a small " wound " open.

The effect can be seen in a London railway terminus after a spell of fog. The railway company can only " get square " by cancelling a large number of trains on all foggy (i.e. blocked) days and also on the first *clear* day when their scattered train personnel and rolling stock work back to their correct stations. The normal long distance time-table can often only operate fully on the *second day* after the trouble is over. But in war, trains cannot be cancelled; they are only postponed and the effect may thus be felt for days, particularly as the dark hours in war never provide the same factor of reserve for catching up with traffic demands as they do in peace.

The same principle must apply to the road, but the writer has not the experience to suggest the minimum time to aim at for damaging a road. As the road is more flexible than the railway, the period is probably longer than four hours and neighbouring alternative routes may require cutting too, being usually more numerous than railway alternative routes.

The Devastated Area.

The difficulty remains of following up the troops with road and rail communications across a devastated area. To exploit tactical into strategical success, some European nations require the railway to advance at about five kilometres per day, and the road at 15 kilometres per day. To achieve this is unlikely across a shelled area, as in 1917-18, or across an area where major demolitions of all sorts has been thoroughly and systematically carried out. Moreover unlimited labour and no enemy air interference will seldom apply to the problem. The three main carriers possible across such an area are:—(*a*) Standard-gauge railway; (*b*) narrow-gauge railway, and (*c*) roads. Except in hilly country, if new construction is required, the speed of construction of a lightly ballasted standard-gauge railway is all but as fast as a narrow-gauge railway, and exceeds that of a road for heavy mechanical transport since the problem of providing roads quickly capable of carrying heavy mechanical transport has not so far been solved. With equal damage, an existing railway can usually be opened to traffic as fast as an existing main road. Maintenance for a new railway is also less than for a new road for a given tonnage per day particularly if light locomotives are employed. This advantage will increase with the modern W.D. standard rail weighing 90 lbs. per yard compared to 75 lbs rail used in 1914-18. This 20 per cent. addition to the weight of track per mile however brings disadvantages such as

the increased provision of steel, and sea transport. The lightly ballasted standard-gauge line avoids transhipment of stores, can be improved later under traffic and developed into the main line as was done in France 1914-18 on occasion. For a " break in " to the enemy's defences, the standard-gauge railway will thus often be the best solution for rapid advance for maintenance of pressure at the front if a " break through " is to be obtained. This does not of course mean that essential roads should not also be driven forward simultaneously. Soviet Russia and Italy have recently shown that large forces can be maintained ahead of roads and railways by the use of aircraft, and this method clearly deserves full examination for dealing with the problem of the devastated area. Maintenance by air has not occurred during heavy fighting (i.e. heavy ammunition expenditure), nor against opposition in the air. Both of these will reduce its feasibility considerably.

Conclusions—Part II.

In the attack and defence of roads and railways, the following points can be summarized as deserving of close attention :—

(*a*) Orders for alternative and chance targets to the Air Force.
(*b*) Inadvisability of bombing steel or reinforced concrete bridges unless they are defiles.
(*c*) Early air attack on arch bridges.
(*d*) Early protection of our own bridges against the " major risk."
(*e*) Size of bombs ; fuzes.
(*f*) Deliberate deception at night.
(*g*) Flank protection against ground raids ; the necessity for infantry at Corps and Divisional H.Q.
(*h*) The minimum length of " cut " for road and rail.
(*k*) Crossing the devastated area ; assistance by aircraft.

Many, if not all, of these points are probably under consideration already. But in recent exercises and manœuvres, solutions differed greatly even in similar circumstances, showing wide divergences of opinion which cannot all be correct. Experience of " the last war " is often scoffed at as being out of date ; yet, used with imagination, it can often erect sign posts which will point reasonably closely to the direction of developments in the next war. Discussion and application of ideas on manœuvres, war games, etc., will soon consolidate such opinions into the best means of retaining mobility of large armies in spite of the new difficulties caused by their own and the enemy's mechanization and air power. Exercises of all sorts in peace time can do much to separate good and bad technique as regards road and rail.

COMPANY TRAINING

By MAJOR E. R. MAHONY, Irish Guards

THE problem of how to make training more interesting is certainly not new, nor does it exist because of a dearth of those well qualified to solve it. If it lingers for any one reason more than another, possibly the explanation is to be found in the word "finance"—that implacable wrecker of efficiency in every department of military endeavour. It is useless, therefore, when thinking about training to permit oneself any flights of fancy. Ideas can only become admissible if they are conceived with one eye always focussed on £ s. d. If, then, we have to do without the help of adequate material resources, let us see how far we can get with the only others available, those which can be called human resources.

The principle which underlies the tactical training of all units, large or small, is the effort to simulate reality. In order to cultivate that elusive atmosphere it is the custom to rely in training on the energy and descriptive powers of certain galloping individuals whose task it is to "paint the picture." This is all very well as far as it goes, but however ably the picture may be painted it will be of service only to those who are intelligent enough to be capable of appreciating it, namely, officers and a few N.C.Os. The imaginative effort on the part of the umpire demands a similar response on the part of the troops, and his work is largely wasted if only about ten per cent. of his hearers are mentally capable of reacting to it. Unfortunately this often seems to happen, and perhaps it may be accounted for on the grounds that though the British private soldier possesses qualities which are the envy of other nations, his very excellence is partly due to the fact that imagination is a characteristic in which he is most singularly deficient. If we wish, therefore, to stimulate the imaginative process in the soldier it is not enough to rely upon mental pictures, outlandish names for commanders, or the hazardous adventures of treasure carts; such things never counted with him in Balham, and he is unlikely to find a reason why they should do so in Hampshire. If adequate response cannot be obtained by appealing to his head, then let us turn attention to his stomach and the soles of his feet. With the exception of physical

courage, all the moral and bodily attributes which characterize the soldier in war can be exploited in peace on the training ground; and since it is our purpose to experiment with the human mind and senses we shall mention those features of them which can be made use of, and illustrate by a few examples the way in which they might be developed.

Negligence resulting in Discomfort.

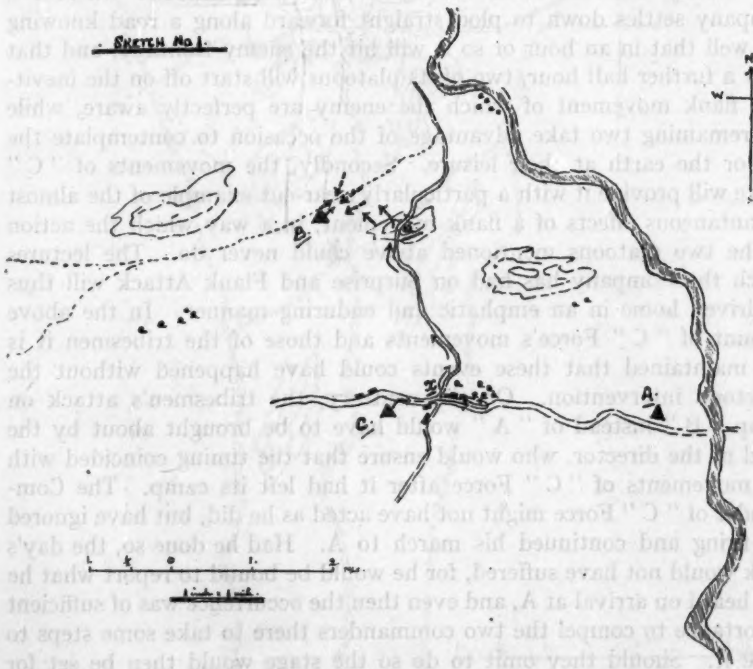
"A" Company had been exercising all day, and was going to spend the night out on company training. "B" Company was also out acting as enemy for "A." After an engagement in the afternoon, "B" Company withdrew so rapidly that "A" lost touch with them, and failed to regain contact by dusk. In due course "A" halted for the night, by which time their interest in "B" had, in conjunction with their energy, begun to flag. One may safely presume that very shortly afterwards all interest in "B" Company was effectively routed by the prospects of an evening meal.

The commander of "A" Company had been instructed by the director to refrain from putting out any protective troops and to encourage passively the spirit of forgetfulness and inconsequence. "A" Company in due course settled down to heavy slumber, but about 2 a.m. they were roughly tumbled out of their blankets, and at least half of these, together with some rifles, were carried off in the dark by the raiders of "B" Company. "A" Company must now pass the remainder of the night as best they may, share their blankets, and march into camp the next morning with some of their number disarmed. Their plight will be spread abroad and will be the cause of comment amongst the other companies.

If realism is the correct foundation on which to base training exercises, then in the above example we claim to have obtained some approximation to it in a harmless and inexpensive way. By producing an anticlimax such as the above the minds of those who experienced it will be more impressed by this single incident than by half a dozen stereotyped exercises in protective duties, wherein nothing more has happened during eight precious hours of human existence than an occasional brush with a hostile patrol. "B" Company should also profit by "A" Company's discomfiture and loss of "face." The approach march, the raid, and the consequences would make an impression on them also. They would not have been told beforehand that "A" Company had omitted to put out any protective troops, but at the director's subsequent conference he would no doubt explain that it was by his orders that none were put out.

Decision on the Unexpected

Sketch 1 is a tribal country, rather open and flat. The right sector is bounded by a river fordable in many places. There is a British Company at A, one at B, and another at C. The role of the latter is that of a central reserve to be used to reinforce either A or B as required. Tribal forces about 200 strong are known to be close to and East of the river. It is reported that they are preparing to make a descent, probably on camp A. The Company commander at C has received orders to move at short notice to reinforce camp A, and he has moved by the road running East from C. When his force is half a mile East of the cross-roads at X he hears sudden and heavy firing from the North-West. What will he do?



We will suppose that he decides, as we think he ought to do, to "march to the sound of the guns." He turns about and marches rapidly northward until he reaches point Q on the other road. Up to this moment he does not know what is happening ahead, but now the situation is suddenly revealed. Will he realize that here is an opportunity to teach his men two vital lessons of warfare—the power of surprise and the value of movement against a flank? Let us assume

that he does realize these possibilities, and therefore launches his force against the tribesmen's flank and rear. They are taken unawares, panic seizes them, they begin to get up, turn, and fly (the umpires must see to it that these movements are carried out in as realistic a manner as possible).

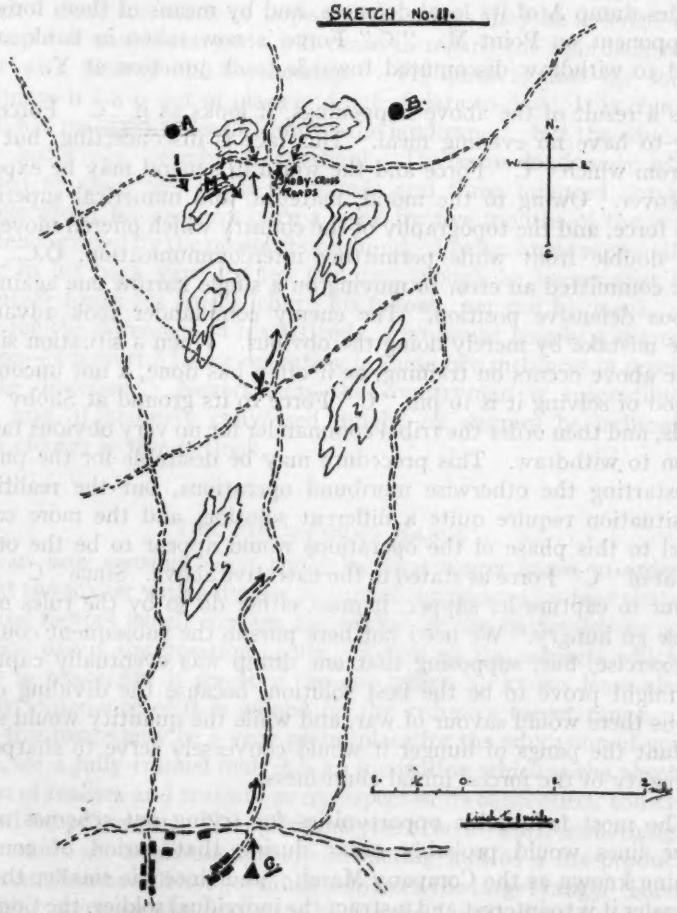
The value claimed for this lesson is twofold. Firstly, from the time that "C" Force left camp until the end of the skirmish the events which took place were entirely unforeseen and unexpected, and therefore true to the teachings of war. The march of "C" Force culminated in a realistic demonstration of the power of surprise and flank attack. The whole operation was full of action, decision, vitality, and was totally different from the usual hum-drum exercise wherein a company settles down to plod straight forward along a road knowing full well that in an hour or so it will hit the enemy frontally, and that after a further half hour, two of its platoons will start off on the inevitable flank movement of which the enemy are perfectly aware, while the remaining two take advantage of the occasion to contemplate the sky or the earth at their leisure. Secondly, the movements of "C" Force will provide it with a particularly clear-cut example of the almost instantaneous effects of a flank movement, in a way which the action of the two platoons mentioned above could never do. The lectures which the Company has had on Surprise and Flank Attack will thus be driven home in an emphatic and enduring manner. In the above account of "C" Force's movements and those of the tribesmen it is not maintained that these events could have happened without the director's intervention. On the contrary, the tribesmen's attack on Camp "B" instead of "A" would have to be brought about by the hand of the director, who would ensure that the timing coincided with the movements of "C" Force after it had left its camp. The Commander of "C" Force might not have acted as he did, but have ignored the firing and continued his march to A. Had he done so, the day's work would not have suffered, for he would be bound to report what he had heard on arrival at A, and even then the occurrence was of sufficient importance to compel the two commanders there to take some steps to solve it. Should they omit to do so the stage would then be set for giving them some unpleasant surprises later on from a direction which they never expected.

Privation following an Error of Judgment

Sketch No II represents a semi-civilized hostile country. A and B are two food dumps at present in the enemy's hands. They are real food dumps, for they contain in equal proportions the evening meal of

two British companys now stationed at C. A and B are about two miles apart. The enemy, who are well armed and led, are about two hundred strong. The country is well supplied with good tracks: there are three main ones roughly parallel and running North and South between C and A B. The ground between the tracks is broken, and difficult for formed bodies to move over. The two companies at C are short of food and are ordered to capture the supplies which are known to exist at A and B.

SKETCH No. II.



"C" Force marches out of camp and, taking the centre track, moves direct on Shoby Cross Roads. Enemy observers posted well forward note this movement and report it together with the news that

the two outer tracks are clear. As a result of this information the tribal commander pushes his main force up to hold the high ground just North of the cross roads. " C " Force is now reported to have passed the track junction at Y, the whole of it still moving by the centre track. " C " Force bumps the enemy and a sharp action develops. The British commander soon decides to get some men on to the high ground about Point M, but the enemy commander, knowing that he has the whole of " C " Force in front of him, and not fearing now for his flanks, denudes dump A of its local defences, and by means of them forestalls his opponent on Point M. " C " Force is now taken in flank and is forced to withdraw discomfited towards track junction at Y.

As a result of the above happenings, it looks as if " C " Force was going to have no evening meal. This fact is disconcerting, but it is one from which " C " Force and the world in general may be expected to recover. Owing to the moral, material, and numerical superiority of his force, and the topography of the country which offered movement on a double front while permitting intercommunication, O.C. " C " Force committed an error in moving on a single narrow one against an obvious defensive position. The enemy commander took advantage of the mistake by merely doing the obvious. When a situation similar to the above occurs on training, as it often has done, a not uncommon method of solving it is to pin " C " Force to its ground at Shoby Cross Roads, and then order the tribal commander for no very obvious tactical reason to withdraw. This procedure may be desirable for the purpose of restarting the otherwise moribund operations, but the realities of the situation require quite a different solution, and the more correct sequel to this phase of the operations would appear to be the orderly retreat of " C " Force as stated in the narrative above. Since " C " Force set out to capture its supper, it must either do so by the rules of war or else go hungry. We need not here pursue the subsequent course of the exercise, but, supposing that one dump was eventually captured, this might prove to be the best solution, because the dividing of the rations there would savour of war, and while the quantity would suffice to blunt the pangs of hunger it would conversely serve to sharpen up the reality of the forces' initial clumsiness.

The most favourable opportunities for trying out schemes on the above lines would probably occur during that period of company training known as the Company March ; and since the smaller the unit the easier it is to interest and instruct the individual soldier, the Company March is an event which might perhaps be prolonged. Instead of a period of two days being allotted to it, this might be extended to cover six days and matters arranged so that as many Companies as possible

from as many different regiments as possible should go out at the same time. In order to make such a programme feasible two sets of conditions non-existent at present would be required: (1) enough ground would have to be made available for the companies to manœuvre on; (2) a central authority would have to be created to co-ordinate the marches and exercises. In connection with (1), the answer depends on the question as to whether there is any unsurmountable reason why companies should not be able to use what is called on training "private ground." Is it too much to hope that the days may be speeded when the people of the countryside will cease to regard the approach of the soldier with dismay and forebodings? Prejudice against the soldier, if prejudice it be, is out of place and out of date to-day. It is true that he still has manners to learn towards the landowner; but the education of the latter also permits of overhaul. The same landowner who is prepared to allow five packs of hounds and three hundred horsemen to career about his pastures once a week for five months of the year is too often horrified by the prospect of a hundred other humans in uniform halting in his back yard for ten minutes, though he knows that they can neither break his fences, churn his fallows, nor run his stock. The reason for the difference in his attitude is no doubt largely a matter of tradition—a powerful factor operating in these two instances in precisely opposite directions. Nevertheless the countryman is susceptible to reason and, if properly canvassed, might by degrees be induced to make a change in this outlook.

The Field-firing Range

Let us now consider what could be done nearer home in order to confront the soldier with a livelier picture of the reasons for his existence. Of all the factors which concern the soldier on the battefield the most important one is the question of fire. Yet of all the subjects which he touches in peace, fire is possibly the one which he knows least about. His only experience of it is gained on the ordinary target range, and, though this range may be a very useful place for the education of young soldiers, for a fully trained man it is an institution which is the absolute negation of realism and truth in every aspect of its conception, construction, and employment. If the infantryman is to learn something of the rifleman's art as distinct from considering him as a fire-producing automaton, then he will not get much help from the target range. Having shown him there, in the first year of his service, that by holding his rifle straight and pressing the trigger correctly he can hit a large, gaudy, and stationary object, he might then be shown that this will avail him little if under other circumstances he cannot find the target before it

finds him : the leisurely feat he so often performed on the well-groomed firing points of Old England may, under less happy conditions, prove to be something of a delusion. The elaborate ritual which is carried out annually on our ranges, occupying some three weeks or so, is regarded as one of the corner-stones of our military efficiency. Here we go right back into the XVIIth century, when the efficiency of the British musketeers was the terror of European infantry. It was musketry then and it is " musketry " to-day. Musketry and mysticism have tended to become synonymous. Shooting has become sentimentalized. The annual course and all kinds of shooting competitions are regarded primarily for their value in generating *esprit de corps*. They are carried out under conditions which bear no resemblance whatever to the battle-field. The annual course is akin to a drill competition in close order. It is traditional, therefore it is good. Groups of fine shots from different units compete with one another, and the credit of the winners is diffused and appropriated amongst their hundreds of comrades, some of whom cannot hit a haystack. No one thinks for a moment of the possibility of the target retaliating ; of it resorting to such base subterfuge as camouflage ; of it being blotted out by smoke ; or of it moving forward or running away. There are perfect gentlemen on both sides ; the wicket is also perfect, and only one side bats. That a man must know how to shoot none can deny. But none are prepared to leave it at that. It is natural that under the perfect conditions prevailing on the ordinary range, every nerve should be strained to produce results which under war conditions must be fictitious. Much worthy energy is expended as well as much S.A.A. ; every form of roll is kept except a casualty roll.

The field-firing range supplies, we think, the answer to the drawbacks suggested above. But it will never come into its own until, firstly, it is made much more elaborate ; and secondly, until its status is raised sufficiently so that it is no longer regarded as a second and lesser phase in a soldier's shooting education. The targets to be used on the field-firing range might be so made as to bear a closer resemblance to an " enemy " than they can be said to do at present. They could be backed with coloured canvas, invisible from the front, to be used for scoring purposes, and be so constructed that they could be moved to any part of the range, and therefore cease to appear day after day and week after week in the selfsame place. When a group of targets is raised a blank-firing attachment should come into action with it to represent the fire being delivered by that section of the enemy. The number of rounds thus fired by the enemy must be set off against the number of hits scored by the troops, and some form of balance struck ; because, if the enemy have been in action for a dozen seconds before the section leader has his men on to them, they are the more likely of

the two parties to profit by the exchange. The enemy should be made as mobile as possible, and not consist merely of that apparently immortal seven whose yellow smocks never grow dirty, and who always appear as if " sized " for a ceremonial parade, and with their dressing taken up by the right.

The man of destiny on the battlefield is, according to our system, the section leader. He controls and directs the fire. For the three weeks of the musketry season, however, he is ignored, and then towards the end of it he may get his section under his hand on the field-firing range for half an hour. If he learns anything during this experience it is to realize how incompetent he is through lack of practice to direct the fire of his section really well. Small blame to him. If all his men are marksmen and he is not up to his job, then the results obtained will be no better than if his section had been composed of second-class shots. But the matter does not end there, unless the section commander can be rendered impervious to bullets. Every man in the section must be an expert fire director, and the higher the shooting standard the higher must be the director's capacity. Fire control and shooting are indivisible. For the above reasons it is suggested that the field-firing range should be the only one, though in saying this we have not by a long way exhausted its possibilities. These are very numerous, and amongst them will be found opportunities for releasing tear gas unexpectedly, and for teaching the man the use of such workaday tools as hand grenades and smoke bombs, articles which nine out of ten soldiers have probably never seen closely, much less touched.

There may be many to whom the suggestion—that the field-firing range might displace the other—will appear peculiarly offensive. Some of the arguments, however, put forward in support of the normal range appear to contain more glory than truth. They revolve round the sublime story of the men of 1914, whose rapid fire drew forth the admiration of the enemy. Nobody can dispute that. But when we seek to apply this reasoning to present-day conditions one gets a feeling that all is not well with it. Our men in 1914 used their rifles well because they had nothing else to use, and they were presented with targets the like of which had never been seen before, and probably never will be again. In the war of the future the machine gun and the light automatic will do the work formerly required of the rifleman, after the manner in which the steam loom displaced the hand. The infantryman, therefore, will cease to be primarily, as heretofore, a fire-producing agency which requires him to be static, and will revert to his true and ancient role, which is that of closing with the enemy. If he is still to be expected to do this on his feet, then, more than ever before, will

he need to study beforehand the art of movement and the technique of sharpshooting.

The field-firing range, then, gives the infantryman scope to play a more individualistic role ; the circumstances of the future will probably compel him to do that, and to break with the spirit of cohesion formerly so characteristic of his arm : independence of outlook and action will be his greatest assets, perhaps one might say his only hope ; if there is any truth in this then the field-firing range is the only place in peacetime where he can develop these qualities.

FOREIGN NAVAL AIR SERVICES

By "NAVARINO"

THE ever-growing importance of aircraft to the Navy and the recent controversies in Parliament and the Press over the divided control of our Fleet Air Arm invite inquiry as to what the principal foreign Powers are doing in this matter. The following is a brief summary of what is known from published sources on the subject.

UNITED STATES

The United States has no separate air force. There is an "army air component," known as the Air Corps, which is part of the Regular Army. There is also a "navy air component"—the Naval Air Service and part of the Marine Corps employed in aviation—these are an integral part of the U.S. Navy. A very heated controversy took place some years ago on the question of amalgamating all the fighting air forces into one service under its own ministry; but many of the arguments used in favour of this course were such palpable exaggerations, if not actual misstatements of fact, that, whatever the merits or demerits of the case, it lost caste by being over-exploited.

From a strategical point of view the United States are very differently situated to our own country. There is no Power which could conceivably be a serious air menace to them, and their air forces are obviously, before all else, important auxiliaries to their land and sea services. To have established a separate department to administer and control them would have been to have created an artificial organization and to have confused functions which are now clearly defined.

The U.S. Naval Air Service "embraces three distinct fields, separate as to equipment and functions, but closely related in that each depends on the other and the Navy as a whole for its support and effectiveness."[1] These are :—

---

[1] Rear-Admiral Ernest J. King, U.S.N., Chief of the Bureau of Aeronautics, in an article in *Brassey's Naval Annual*, 1936, p. 166—to which the reader is referred for a fuller account.—EDITOR.

(1) *Flying Boats.*—To operate over great distances at sea; to be self-contained to a greater degree than other types; to be powerfully offensive and defensive; and to be able to co-operate with the fleet at a given time and place when required.

(2) *Ship-borne Seaplanes.*—Launched from battleships and cruisers for observation and scouting. These are primarily intended to be of direct assistance to their own parent ships. It is also their duty to report enemy movements to the Commander-in-Chief to assist him in the conduct of the fleet during the approach and in battle.

(3) *Carrier-borne Landplanes.*—Launched from aircraft carriers essentially for offensive functions. They include scouting aircraft to find the enemy; bombing and torpedo aircraft to attack his ships; and fighters to destroy enemy aircraft, or, as a secondary function, to attack light craft and exposed positions in heavy ships with machine guns and small bombs.

The Navy Department has its own shore bases for aircraft. These bases "are required for ship-based aircraft in the same manner as overhaul yards and home bases are required for ships of the fleet." [1] Admiral King also remarks that "ship-based aircraft are even more dependent on land bases than the ships themselves, since a large portion of their training must be done ashore before they are competent to operate from ships. For reasons of fuel economy, carrier-based squadrons with their entire complements of personnel operate several months of each year from Fleet Air Bases." It will be noted that under this system both the training and discipline of all personnel employed in connection with sea air work, whether embarked or operating from shore bases, remain consistently and continuously under naval authority.

The U.S. Navy, being responsible for the protection of commerce in the "sea lanes," also has its shore bases, permanent or temporary, for the operation of its patrol aircraft, i.e., flying boats. Finally, there are technical and instructional naval air establishments, such as the Naval Aircraft Factory at Philadelphia; an aviation unit at Newport, Rhode Island, which works in conjunction with the Torpedo Factory and School; an air unit at Dahlgren, Virginia, which assists the Naval Proving Ground in testing and developing aviation ordnance; the *ab initio* flying training unit at Annapolis, for Midshipmen; the flying training establishment at Pensacola; and various naval reserve aviation bases conveniently situated near large centres of population, so that

[1] *Ibid.*, p. 169.

officers who have done one or more years in sea-going aircraft and then return to civil life can maintain their flying efficiency in local aviation units.

The demands for additional personnel to meet the rapid expansion of the U.S. Naval Air Service has necessitated the introduction of a scheme of enlisting young men to be trained as pilots direct from civil life. These are entered as Aviation Cadets. They do not get a commission during their service, but appear to rank between Warrant Officers and Midshipmen. After preliminary training at a Naval Aviation Reserve Base, and afterwards at Pensacola, they are drafted to sea for three years. At the end of that period they go to the Reserve and are given a commission. This scheme is primarily to make good deficiencies until the necessary increase is provided by the additional entries into Annapolis; but it will also provide a very valuable reserve for the Naval Air Service.

The U.S. Navy has four aircraft carriers in commission: the 40,000-ton "Lexington" (90 aircraft) and "Saratoga" (79 aircraft), the 14,500-ton "Ranger" (75 aircraft), and the 11,500-ton "Langley" (33 aircraft). There are also building the 20,000-ton "Enterprise" and "Yorktown," each of which, it is reported, will carry about 100 aircraft, and the 14,700-ton "Wasp," which will replace the "Langley."

Most of the battleships have two catapults—one on "X" turret and the other on the quarter-deck, and three seaplanes. The 10,000-ton cruisers are equipped with two turn-table catapults and carry four seaplanes each. The "Augusta," of that class, carries six and has accommodation for eight seaplanes.[1] One submarine, "S.1," is fitted to carry a single small seaplane.

The first-line strength of the Naval Air Service, including reserves, is being brought up to 1,259 aircraft by 30th June, 1937, and a total of 1,910 is projected by 1942. The present distribution of naval shore-based aircraft is:—

Flying Boats.	*Reconnaissance.*	*Torpedo Bombers.*	*Fighter-Diver Bombers.*
114 "patrol."	31 landplanes.	24 landplanes.	18 landplanes.
44 "utility."			

[1] Fuller details of the material side of Foreign Fleet Air Arms will be found in an article on that subject in *Brassey's Annual*, 1936, p. 128.

FRANCE.

As our nearest neighbour and a nation whose air problems are a vital part of home defence, France makes an interesting comparison with the United States as regards the administration and control of her naval air forces. The present organization was clearly defined in a combined report of the Ministers of Marine and Air published in the *Journal Officiel* of 26th August, 1936.

The general title of the whole naval air service is the *Aéronautique Maritime*. This is divided into two parts—the *Aéronautique Navale*, under the Minister of Marine, manned by the navy, and the *Aéronautique de Coopération Maritime de l'Armée de l'Air*, which is a section of the Air Force the duties of which are definitely laid down by the Government. It is based at places selected by the Air Ministry after consultation with the Minister of Marine. It is put at the disposal of the naval Commander-in-Chief for exercises and manœuvres. Training, as regards liaison with naval forces, is organized by the General Officer Commanding Air Regions in collaboration with the naval Commanders-in-Chief.

As this force, which consists of fighters, heavy bombers, and protective balloons, is specially trained for operations in liaison with sea forces, and may not be called on to carry out other duties, it is not apparent why it should be under such a complicated system of dual command and control. So far does this go that, while it is inspected by the Minister of Air as being one of his units, it is also inspected by the Minister of Marine while carrying out exercises and manœuvres under naval orders.

The purely naval *Aéronautique Navale* is divided into the *Aviation Embarquée* and the *Aéronautique de Coopération Navale Non-Embarquée*. The latter has bases at Cherbourg, Brest, Hourtin, Berre, Cuers, Saint Mandrier, Hyères, Aspretto, Karouba, and Port Lyautey. These, together with certain auxiliary bases intended for naval use in time of war, and Orly Naval Air Station, are all at the permanent disposal of the Ministry of Marine.

Programmes of the constitution of the *Aéronautique Maritime* generally, including the plan of development for war, are arranged by the Ministers of Air and Marine in consultation. The Air Ministry deals with questions of material, including the supply of aircraft for the *Aéronautique Navale*; but such purely naval items of armament as torpedoes, A.P. bombs, etc., are arranged for by the navy.

Naval pilots are trained in flying by the Air Force to programmes agreed to by the Ministry of Marine. Air Force pilots attached to the *Aéronautique Maritime* are trained in naval matters by the navy to

programmes agreed to by the Air Ministry. Observers, naval ratings, and mechanics are trained by the navy.

The naval training centres are Hourtin (seaplanes), Saint Raphael (trials of material), Rochefort (balloons). The report includes detailed orders in regard to the administration of these stations as between the two Services.

The " Béarn " is the only true aircraft carrier in the French navy. This is a vessel of 25,000 tons, capable of carrying forty aeroplanes. There is also the " Commandante Teste," a *transport d'aviation* of 10,000 tons, which acts as a tender to the " Béarn," and also houses a reserve of aircraft for fighting ships fitted to carry them. She has accommodation for twenty-six seaplanes and is equipped with four catapults.

The latest battleships are being fitted with two catapults, and will carry four seaplanes. The " Lorraine " alone of the older battleships has a catapult and two aircraft. These have replaced the centre 13.4-inch gun turret.

The later 10,000-ton cruisers have two 3-ton catapults and carry three aircraft ; the two earliest ships of the class have one 3-ton catapult and carry two aircraft ; the " Galissonnière " 9,000-ton, 6-in. gun class have one catapult and four aircraft. The sterns of the six ships of this class are square and are fitted with a Hein mat—a towed " landing-on " carpet.

The increasing importance attached to naval air work is shown by the fact that Capitaines de Vaisseaux and Capitaines de Frégates now undergo courses with the Air Force while awaiting appointments to commands at sea.

ITALY.

All the air forces of Italy are unified in one Service—the Royal Air Force—and their discipline, organization and training are all under the Air Minister, who exercises his powers through the Chief of the Air Staff and the commanders of the territorial air zones. The Service is divided into the air force proper, the army air force, the naval air force, and the colonial air force.[1] The composition of the air force units attached to the army and navy is determined, both as regards the types of aircraft and also camps and bases, by the Air Ministry in consultation with the other ministries concerned.[2]

The only approach to a carrier in the Italian navy is the merchant ship "Miraglia," taken up while on the stocks and used as a seaplane

[1] See League of Nations Armaments Year-Book-1936.

[2] The Operations Division of the Naval Staff includes the "5th Bureau, liaison with the air force, naval air services."

carrier. It is believed that the two 35,000-ton battleships building will have one or more catapults and four aircraft. The reconstructed battleships "Cavour" and "Cesare" have had their centre turret replaced by two catapults and four aircraft. All the latest cruisers have one or more catapults and two to four aircraft.

It would appear that naval air work is practically limited to the comparatively small number of seaplanes which can be catapulted from the cruisers, or to shore-based aircraft, not normally under naval control, which would be despatched to co-operate with the fleet as occasion arose. This does not seem to be a very efficient organization, and leaves the impression that there is no adequate air force to provide support for the Italian fleet outside the range of shore-based aircraft, and even for that there seems to be a lack of the requisite naval personnel and sea training.

GERMANY.

Fleet air work is in its infancy in the German navy. This is not unnatural in view of the fact that she was prohibited from possessing any war aircraft by the Versailles Treaty, and has only comparatively recently started to organize this section of her air forces. Development is likely to be slow until her first two aircraft carriers are completed, in two to three years time, and while the naval air arm remains entirely under air force control for training as well as maintenance.

In the late war the operations of the German fleet were often hampered, and opportunities were missed because the naval high command was dominated by military control. To-day it appears that the air force is becoming a sort of *corps d'élite*, and this may mean that, ultimately, it will supersede the army as the predominant influence in shaping war policy. On the other hand, the increased speed and range of action of the latest units in the German fleet will give it scope for much more extended operations than those which it could have undertaken in the late war. This would seem to indicate that the navy must be given full control of the recruitment, training, and employment of its sea-going air force. France has been through various stages of "trial and error" before evolving the present system, which has restored to her navy in great measure the principle of being self-contained in aircraft and their crews no less than in other units of the fleet; and Germany's air and naval problems would seem to bear a marked resemblance to those of her neighbour.

At present, the VIth area of the air force organization is virtually the naval air arm. The headquarters are at Kiel, and it includes the coastal stations and sea-going aircraft. The officers and petty officers

were originally in the navy; but, in company with the commander of that area—General Sander—they were compulsorily transferred in 1933. In one respect, however, the system is more logical and comprehensive than our own Fleet Air Arm in that the personnel remains permanently in the formation and is not liable to be taken for non-naval air work and replaced by officers or men who are untrained in their special duties.

All the post-War battleships and cruisers, except the "Emden," carry two aircraft and are equipped with a catapult. There are also three small seaplane tenders, the "Krischan I," "II," and "III," equipped with a long-armed derrick for hoisting in aircraft in rough weather.[1] These craft, strangely enough, belong to the air force, although their duties would appear to be mainly naval.

JAPAN.

Japan's naval and air problems are more closely analogous to ours than those of any other Power: she is an island nation, largely dependent on sea-borne trade and imports of vital commodities, and she has very vulnerable cities and a continental air menace within flying distance of her shores. The Japanese are wont to study very carefully the systems adopted by other great Powers, especially as regards the organization and technique of their fighting Services, and then to imitate what they regard as being the best features in each or any of them. It is interesting, therefore, to see that they have steadily adhered to the same system of control and command of their air forces as that in the United States, even though their strategical problems are different in several important respects. There is no independent air force, and the navy and army each have their own air arm.

In one way Japan differs from Great Britain: she has a continental colonial problem, and the military commitments involved in Manchukuo necessitate the maintenance in that country of very considerable forces for its defence against external aggression, for safeguarding long lines of communication, and for internal security. For such duties aircraft perform, mainly, an auxiliary role. This, no doubt, is an argument against a separate air force, with its own system of administration and control. Possibly, too, the Japanese Government belong to that school of thought which sees the strategical employment of fighting forces as being divisible into two main functions: the defence and attack of land objectives, and the defence and attack of sea objectives—objectives in the air are obviously fleeting and intermittent. However that may be, there is no reason to believe that they fail to appreciate the value of

[1] Vide *Jane's Fighting Ships*, 1936, p. 253.

air power or ignore the menace of air attack from the adjacent continent.

The naval air service includes not only the aircraft embarked in warships, but also nearly forty naval air bases on shore. Some of the latest to be established are those at Yokohama, Kisarazu, Maixuru, Kanoya, Chinkai, Nemuro, and in the Kurile Islands. The force has been steadily increased: the First Replenishment Programme made provision for fourteen new squadrons; the Second for eight more; and a Third Programme is projected. It is understood that the Navy Ministry aims to build up to a thousand aircraft, including reserves, by 1938. In order to provide the personnel for this expansion, the Ministry is entering pilots direct from civil life on a similar system to that instituted in the United States. In addition, a number of university students are being given flying instruction in order to create a reserve for the naval air service.

The Japanese navy will soon be well supplied with aircraft carriers; the biggest are the 27,000-ton "Kaga" and "Akagi," with a capacity of fifty to sixty aeroplanes, although the normal complement is reported to be only thirty.[1] There are also the "Ryujo" of 7,100 tons (24 aircraft) and the older "Hosho" of 7,470 tons (26 aircraft). There are building the 10,050-ton "Soryu" and "Hiryu." There are also three 10,000-ton aircraft tenders or seaplane carriers building. The battleships are being given catapults as they are taken in hand for modernization generally. The bigger cruisers have two catapults and carry four aircraft; the smaller cruisers are equipped with one catapult and two aircraft.

SUMMARY.

It will be seen that of the five most important foreign naval Powers the two with the biggest navies—the United States and Japan—have a naval air service which is an integral part of the fleet, administered solely by the naval departments, and manned entirely by permanent or temporary naval personnel. Neither country has a separate air service.

France has a separate air service, but the navy has its own air arm under the Minister of Marine.

All three navies have shore air bases for naval aircraft operating in connection with the protection of shipping.

Italy and Germany have separate air services, and these provide the naval air units. For different reasons, naval air work does not appear to be highly developed in either of their navies, but in Germany, at any rate, it is already being regarded as a highly specialized branch of air operations, whether conducted from ships or shore bases, and the personnel is organized and trained accordingly.

---

[1] Vide *Jane's Fighting Ships*, 1936, pp. 339, 340.

SEARCH AND PATROL OVER THE SEA

By Flight-Lieutenant A. H. Willetts, R.A.F.

In May, 1912, a new department was formed at the Admiralty. It was called the Air Department, and its first task was the preparation of a memorandum laying down the functions of aircraft in co-operation with naval units. A summary of the conclusions arrived at and placed before the Sea Lords by Captain Murray Sueter, the Director of the Air Department, is given in "A Short History of the R.A.F." as: "Distant and tactical reconnaissance for the fleet both at sea and off enemy coasts, the detection of enemy submarines and mines, and the attack of hostile aircraft." The similarity of this conception of the function of aircraft and that of the present Fleet Air Arm is at once apparent. In their more detailed forecasts of the employment of aircraft the pioneers were equally successful: the paper submitted by Lieutenant H. A. Williamson in January, 1912, to the Submarine Committee is as precisely true to-day as is the general statement of the Air Department already quoted. His opinion that: "Security could be gained by the use of aircraft, not only to detect and attack submarines, but to keep the submarines completely submerged during the passage of the fleet through a danger area and thus render them innocuous" was amply justified by war experience, and to-day, is the basis of anti-submarine patrols.

That deductions of such accuracy and value were made in 1912, when aircraft were little more than dangerous toys, when the total number in the country of all types could be counted on the fingers of one man's hands, and when such aircraft as the 50 h.p. Short seaplane was the criterion of what might be expected in the way of performance, seems uncanny.

The value of naval air reconnaissance is now fully recognized: the function of reconnaissance aircraft is clearly defined, but the methods by which aircraft are expected to attain the object of reconnaissance is not so clear. The genesis of good naval reconnaissance is a sound system of search or patrol. For discussion and study these have come to be regarded, like the Siamese twins, as inseparable; yet they are fundamentally different operations of war, and it is not possible to lay down useful principles for a search which will not in some respect contravene the laws of sound design for a patrol. The factors of time and space in a search cannot be similar to those which apply to a patrol, and yet, in all official handbooks, both of the Fleet Air Arm and the

Royal Air Force, systems are labelled searches or patrols with complete disregard of their true nature : the claims of euphony have priority over logic.

One need go no further than the Concise Oxford Dictionary to obtain sound definitions of search and patrol. Here ' search ' is " to look for . . . something of which presence is suspected " ; and ' patrol ' is " going the rounds. . . ." In naval reconnaissance an air ' search ' should be recognized as the organized employment of aircraft to locate and report an enemy whose existence is known and about whom some intelligence is available. The term ' patrol ' should be confined to the organized employment of aircraft to ensure that an area or line is kept clear of unreported enemy forces. The character of the information supplied by a patrol is essentially different from that of a search. A patrol ensures that an area is clear of unreported enemy forces ; it presupposes no positive knowledge of an enemy, and negative information might often be as valuable as positive. A search, on the other hand, is used to verify and supplement information already available. The two are so fundamentally different that it is proposed to deal with each separately.

Search

The great trouble with search over the sea is that few people have troubled to visualize the tremendous natural difficulties involved in setting an aircraft to find a unit in the immense featureless waste of the sea. A little mathematics will help. Imagine an enemy cruiser with a maximum speed of 33 knots and complete freedom to move in any direction. Suppose that cruiser to have committed some act, such as the sinking of a merchant vessel, which fixes its exact position at a given time, and suppose that an aircraft can commence a search for the cruiser within 3 hours. To simplify the problem (and, incidentally, immeasurably simplify the searching aircraft's problem) let us stop the cruiser at the end of the 3 hours. The cruiser might then be anywhere inside a circle of approximately 100 mile radius. The area of a circle is πr^2 and, therefore, the area the aircraft might have to cover before finding the cruiser is rather more than 30,000 square miles. Supposing our aircraft has a speed of 100 knots and, visibility being perfect, it can see ten miles on either side of its track, i.e., it can search a band 20 miles wide. Every hour the aircraft can survey a maximum area of 2,000 square miles. So that, if the aircraft never duplicates its search, it can theoretically cover 30,000 square miles in 15 hours.

If the cruiser does not obligingly anchor after 3 hours, or if perfect visibility does not hold for 15 hours from the commencement of the search, or if the aircraft has not more than 15 hours endurance, or if the observer's navigation is not perfect, the cruiser might even then get

away undiscovered. If, however, the cruiser were given 1½ hours start instead of 3 hours, and all the other conditions remained the same, the aircraft could cover the necessary area in less than 4 hours.

All this might have been summed up quite accurately in the simple statement that the area to be searched varies as the square of the time taken to commence the search, but such a statement does not help a commander to visualize the all-important need for speed in search. In the simplified example given above, 11 hours of 15 hours searching can be saved by gaining 1½ hours in putting the search into operation. Here is a simply evolved fact of such primary value that it is worth writing down as a principle which all search must obey; rapidity in ordering and rapidity in commencing search is a first consideration.

The incontestable fact that the cruiser might be in any one of 30,000 square miles 3 hours after its exact position was known gives rise to other serious considerations on the subject of search. It has been shown that one aircraft, searching 2,000 square miles an hour would take 15 hours to cover the area; it is equally true that five aircraft could cover the same area in 3 hours providing there was no duplication of search. Had we not, for simplicity's sake, stopped the cruiser at the end of 3 hours the superiority of sending five aircraft for 3 hours over sending one for 15 hours would have been apparent immediately. The area is increasing as the square of the time and it is increasing as the search is progressing. With one aircraft, the rate at which the area increases soon becomes greater than the rate at which the aircraft can search and so the problem becomes insoluble. By using a larger number of aircraft the total flying time must be considerably less, and that is often the only way success can be guaranteed. This gives a second principle in the design of search systems: the maximum number of aircraft must be employed from the commencement of the search.

There are two other principles, so obvious that it may be wondered why they are not recognized as axioms and instinctively applied to all systems of search. The two principles are that the system should be economical, that is, there should be no avoidable duplication of search, and that the system should be simple and easy to navigate. The dual waste—waste of aircraft and waste of time, by unnecessary duplication, cannot be defended in an operation which calls so urgently for a maximum effort with the least possible delay.

That the system must be simple and easy to navigate calls for more argument. The ultimate value of the search in reconnaissance is the quality of the information obtained, and of all considerations which affect the quality of naval information, accuracy of position reports is the greatest. Inaccurate positioning of an enemy may render a reconnaissance report worse than useless, it may lead to disaster. Accuracy

in navigation varies directly with the simplicity of the search followed, and its importance must be recognized in evolving search systems.

We have thus arrived at some guiding principles on which the design of systems of search should be based. They are :—

(i) The system should be capable of being rapidly ordered and rapidly put into operation.
(ii) The maximum number of aircraft available should be employed from the commencement of the search.
(iii) There should be no avoidable duplication of search.
(iv) The system should be simple to navigate.

Patrol

A patrol has been defined earlier in this paper as the organized employment of aircraft to ensure that an area or line is kept clear of unreported enemy forces, and an attempt will now be made to discover the principles which should govern the employment of aircraft on these duties.

When a man wishes to keep rabbits out of a field, he places round it a wire fence the meshes of which are small enough to prevent rabbits getting through. When the police wish to keep a road clear of the public during a procession, they do so by lining the kerbs. But it would be wasted energy if the farmer, in wiring in his field, enclosed a rabbit warren and yet took no steps to destroy the rabbits in it. The police must clear the road of people before lining the route. These natural methods of safeguarding an area consist of two operations, clearing the area and safeguarding the perimeter. A little reflection will show how consistently this method of patrol is used : a cricket ground, a city, a country, are cleared and kept clear of unwanted elements by a sweep and a boundary guard. It is worth enquiring why.

The first virtue of this method is economy, for by protecting the boundaries of a cleared space, a fence round the perimeter maintains the benefits of the first sweep. Its second virtue is simplicity : the line to be guarded is clearly defined and the effectiveness of the system is certain. Here are principles worthy of applying to aircraft patrols : economy, simplicity, and effectiveness. There are exceptions to this rule, and anti-submarine patrols are perhaps the most important. Here the special characteristic of the submarine, which enables it to become invisible at will, gives it the power to jump the fence, and the sweep and perimeter patrol—the best patrol in normal cases, becomes, in consequence, ineffective.

Factors Affecting Patrol and Search

A system of patrol or search should be the outcome of a logical appreciation of the aim of the operations and, if the plan is to be a sound

one, it must be based on a full understanding of all the factors which affect the aim. Yet the true nature of many factors, which have to be considered in naval reconnaissance, is not always obvious. It is proposed to discuss only a few of the important factors which affect the design of patrol and search systems, in order to demonstrate the necessity for careful analysis of all.

Visibility.—The visibility from aircraft is a basic fact upon which all organized search and patrol must be calculated. The fallacy that aircraft enjoy special advantages of vision is now generally recognized, and the definition that visibility distance is the maximum distance at which an observer can see and recognize the object of search is accepted. But there is one aspect that is seldom fully realized, and that is the effect that the area covered by the object has on visibility. Compare the tasks of searching for a single rock and an island 20 miles square, both of which can be seen and recognized from a distance of 10 miles. If several aircraft are sent over the area in line abreast and on parallel tracks 20 miles apart, to search for the rock, one, or at the most two aircraft will locate it. Had the aircraft been looking for the island, three or possibly four aircraft would have found it, and therefore the work of two aircraft would have been done unnecessarily. It will be seen, therefore, that although the visibility distance of the island and the rock were identical, the area of the island had the effect of virtually increasing this visibility.

A fleet at sea covers a large area, and what was true of the island will be equally true of a fleet. A little thought will show that the virtual visibility is the actual visibility distance, plus half the smallest dimension of the object searched for.

Time.—The time factor is often the controlling influence in the design of systems of search. Search problems are usually presented in one of three forms :—

(i) To locate the enemy before a certain time, e.g., nightfall.
(ii) To locate the enemy as rapidly as possible.
(iii) To locate the enemy with certainty, however long it takes.

It may be the same enemy, and the same number of aircraft may be available under the same weather conditions, but it is obvious that the same system will not satisfy the conditions of time given above. In patrols, the time taken to establish a given system may be so great as to render it useless, and it is this factor which sometimes renders the otherwise desirable sweep and perimeter patrol unsuitable. To establish a patrol of this kind, the perimeter patrol must be fully working before the sweep commences, but full security is not obtained till the sweep is completed.

Space.—The selection of the proper area to patrol or the most likely place to conduct a search is usually the most baffling yet important part of controlling reconnaissance. It requires the most careful analysis of enemy information to ensure that none is wasted. This is particularly so in dealing with an elusive enemy like the submarine. The lack of under-water endurance, limited vision, low speed, vulnerability, all have a direct bearing on limiting the area that need be patrolled. Limitations of speed, vision, and under-water endurance enable a patrol line of comparatively short length to be established with a fair chance of catching a submarine on the surface. Slow under-water speed and vulnerability enable the danger area that it is necessary to patrol to be reduced to small dimensions, and knowledge of the way a submarine must attack permits a very small patrol to give a very large measure of security.

Search and Patrol Systems

In the introduction to this paper an attempt was made to condemn the standard systems of search and patrol. This paragraph advocates something which, at first sight, might appear to be so nearly the same thing, that the difference between those systems which have been condemned, and those standard systems which will be proposed, must first be explained. There are twenty-five patrols and searches described as standard, and to some of these there are several variations. Each one takes an imagined situation and propounds the best answer for that set of conditions. There is very little flexibility in the solutions which can allow a commander to vary them to conform to an actual problem with which he is faced. The result has been that, in actual operations, finding no suitable standard solution, commanders devise their own system without the advantage of having previously mastered the principles on which to work.

It is suggested that a more careful study of the theory of search and patrol would be more valuable than memorizing the details of a very large number of worked out answers. If the theory is mastered there are a few forms of search and fewer forms of patrol which can be adapted to any problem. These are real standard systems which give definite results, and familiarity with them would enable a sound answer to be given to any problem. They are :—

(i) Sweeps.
(ii) Line patrols.
(iii) Close searches.
(iv) Curves of search.

In these four groups is the framework of the answer to all questions of design.

A GROUP MESS FOR OFFICERS

By Captain E. Foster Hall, M.C., The Buffs

THE origin of the Officers' Mess appears to be wrapped in mystery. Messes existed in the XVIIIth century " in order that officers could be properly and genteely accommodated . . . within the compass of their pay . . . as one family," but they did not become general until the XIXth century. Officers apparently were at liberty to withdraw from the mess at will, but in the Rifle Corps any way, in 1800 (vide regulations published in 1801 and quoted in the Journal of the Society for Army Historical Research) any officer withdrawing himself from the mess was to be considered " as indicating a wish not to corps with his brother officers, in which case the sooner he left the regiment the better."

Mess dress does not seem to have been introduced until late on in the XIXth century, the first recorded being taken into use by the 1st Battalion the 60th Rifles at Gibraltar in 1835. The purpose of mess dress was to provide a relief to the close-fitting full dress jacket. Many of the customs of those days have changed, and since the Great War the changes have been more rapid. The mess as an institution has recently come in for considerable criticism, and it is well to face and answer some of the questions that are being asked in connection with it. Of these, two of the most important are : has the officers' mess outlived its usefulness ? Or does the system merely need modification to bring it into line with modern requirements ?

Firstly let us consider the present conditions. On most evenings of the year it would be possible for a visitor to go round the messes of any station and find them empty and deserted ; quite empty before dinner and very nearly so during and after that meal. In North Camp, Aldershot, there are five large mess buildings almost in a row. Temporary attachments, due to the presence of several schools of instruction at Aldershot, usually keep, or used to keep, the quarters in these buildings fully occupied. Yet on an average night, probably not more than four or five officers could be found at dinner in any one of them. In India it is slightly different, in that there are fewer alternative dining places, and the dining members of a mess usually include a number of " grass-widowers " whose families are away in the hills or at home. But even in India the majority of messes are deserted by 10 p.m., except perhaps

for an officer or two asleep over their papers or magazines. The officers' mess is certainly not used as much as it was. It can scarcely be because officers no longer wish to corps with their brother officers. What, then, is the reason? Can anything be done about it?

There are many answers to the first of these questions, but most of them can be placed under the one heading of the influence of modern conditions of life. The introduction of the cheap motor car, and soon probably of the cheap aeroplane, gives the officer an opportunity of getting away from his place of duty. For others, the gramophone and the wireless have added to the attractions of their own rooms, the more so as neither for obvious reasons have found favour in the mess anteroom. As each year passes more and more stress is laid on the necessity for officers to study; not only to study military matters, but also imperial and international affairs and matters of general interest. Study of any sort can undoubtedly be better done in the quietness and privacy of one's own room. So, to sum up, the effect of the influence of modern conditions has been to give the officer an increased desire, and a better opportunity, to get away from army life when off duty and a desire for more privacy in his private life.

This desire has been increased by the insistence on uncomfortable clothes in mess and unnecessary formality. Mess kit has survived to become an anachronism and now savours more of fancy dress, with its comfortless jacket and its tight overalls. Though it may hold attractions for the newly-joined, which I doubt, it can scarcely be considered suitable for every-night wear. In many messes, too, the five or six course dinner still reigns supreme. Until the port is passed, none may leave the table. Added to this the meal is very often a poor one. The expense of keeping up a large mess building and paying servants' wages together with bills for the extra lighting, heating and cleaning that is so necessary, often leaves little for the cost of messing. A desire not to add to the mess bill often results in poor food, and consequently in the officers incurring extra expense by dining elsewhere. A curious result, and one, too, for which the officers themselves are really to blame. But less formality and better food would attract them to stay in mess. The expense problem is a very big one at the present time. King's Regulations lay down various limits to the different subscriptions, but even within these limits the monthly mess bill reaches a high average, too high for many of the present-day Second-Lieutenants, who have no private means, and also for many of their seniors. To run a mess comfortably is an expensive matter when the number of dining members is small, as the overhead expenses remain fairly constant. The messing rate is the charge most easily altered, and unless due care is taken it is

the messing that suffers when costs have to be reduced. All these points conspire to draw an officer out of the mess. For change of food, comfort and a less military atmosphere he dines out. For study and for enjoyment of gramophone or wireless or even for light reading he retires to his room, where he can shed his mess kit and make himself comfortable. In India this tendency to make more use of one's private room or bungalow also exists, and is helped by the rather greater comfort that is usually to be found there and by the presence, in most cases, of a small cellar.

What, then, do we find in our examination of this question, and what is the remedy? We find that messes are little used now because they are expensive and because too much insistence is placed on out-of-date clothes and on unnecessary formalities. The answer to the first problem, the problem of expense, seems to be to form larger messes, that is station messes or, in Aldershot and places of similar size, brigade messes. The suggested answer to the second problem is to run these messes as clubs with a secretary or caterer on the lines of the naval mess steward; meals to be moveable within certain limits and the dress for dinner to be dinner jackets except on the weekly guest night when mess kit would be obligatory. An objection to the station mess is sure to be raised on the grounds of its damage to unit *esprit de corps*. It is not considered that such an objection is valid. *Esprit de corps* does not rely on a unit mess; it undoubtedly relies very largely on the officers but not on the building in which they live nor on the organization of their meals. If it did, *esprit de corps* would have suffered very greatly in the past few years. Undoubtedly arrangements would have to be made for the custody of Colours, mess silver and other trophies, but this should not prove difficult. In any case the best place for a large amount of mess silver is undoubtedly the regimental museum. Considerable savings in baggage charges when units change stations would, incidentally, accrue both to units and to the government, and the larger messes should not only prove less expensive but should also be able to provide amenities such as billiard tables which are now beyond the reach of many small messes. Overhead charges and subscriptions would work out at a smaller total per head, though units of course would have to submit their own bills to officers for games, rifle club and similar subscriptions.

A more important objection is that units would be unprepared to form a unit mess on being moved from a large to a small station and on mobilising for war. Again, however, it is considered that this difficulty is by no means insuperable. In peace a change to a system of station messes would entail messes even in single battalion stations being run as

station messes with a permanent caterer and with crockery, furniture, etc., provided. Each unit also would have to maintain its field mess requirements for manœuvres or mobilization, and one N.C.O., probably of the rank of corporal, from each unit would have to be employed and trained in the station mess for appointment as unit mess sergeant in an emergency.

Outweighing these disadvantages is the very great advantage to the army as a whole of officers of all arms getting to know each other intimately. Fellow interests will undoubtedly make unit circles in each large mess but the outside contacts will be there. Friendships from Woolwich and Sandhurst, and in the future, let us hope, from a combined army cadet college, will tend to break up these small circles, and this will ease considerably the difficulties of inter-unit co-operation in battle.

To the club system of mess life the main objection would seem to be the difficulty of bringing up the young idea in the traditions of the Service. This will need care and extra supervision on the part of the senior officers of the regiment. The weekly guest night, from which no dining member should be allowed to be absent without permission and at which all married officers should be present at least once a month, will help in this matter.

One last objection to the scheme is the cost of building these station messes, and this probably is the biggest difficulty of all. The scheme cannot be introduced gradually, one station at a time, because a unit moving from a " converted " mess to an " unconverted " mess would be in an immediate difficulty. The scheme, therefore, might involve a considerable addition to the building programme, but it is submitted that the advantages, both to the army and to the individual officer, are such that this is a charge which should be faced. There is a shortage of officers ; many factors contribute to this shortage and it is not claimed that the question of the officers' pay and expenses is more than one among many factors. But it is claimed that until the officers' expenses are brought into relation with their pay this shortage of officers will continue, even though the other factors are eliminated.

We are now in a position to answer the questions asked in the first paragraph. Has the officers' mess outlived its usefulness ? No, it has not, since officers still need to be " properly and genteelly accommodated " as one, now rather increased, family. Does the system need modification ? To this the answer is, undoubtedly, yes. It needs modification to bring it within the compass of officers' pay with due regard to the comfort and standards required by modern conditions. This, it is submitted, can best be done by working on the principle of station messes, organized and run as clubs.

SOME MORE ASPECTS OF THE RECRUITING PROBLEM

By Major F. S. B. Grotrian, M.C., Royal Artillery.

MUCH has been written and spoken lately regarding the recruiting problem of the Regular Army. Most utterances seem to ignore the fundamental reason for the recruiting difficulty, and to dwell more upon the contributory causes.

Since 1914 the whole social structure of the United Kingdom has undergone a great change. Prior to 1914 this structure could be conveniently divided up into three categories, as follows:

(i) The monied and landed class.
(ii) The upper, middle and lower middle class.
(iii) Skilled, semi-skilled and unskilled labourers and a very few unemployed.

After the Great War ended a general levelling up process began and has been going on steadily to this day. Many from Category (i) have gone down to Category (ii), whilst many from Category (iii) have risen to Category (ii), notably the skilled and semi-skilled labourer who now commands a higher wage and consequently a higher standard of living. To-day the social structure presents a very different aspect. Category (i) has been reduced to about thirty per cent. of its pre-war size. Category (ii) has become vastly increased in size. Category (iii) has been much reduced with the exception that it now has a very large percentage of unemployed. For purposes of this article the unemployed will be considered as a part of Category (iii), although it is fully realized that a proportion come into Category (ii).

Prior to 1914 the Army obtained the bulk of its recruits from the old Category (iii), that is to say the Army offered a similar wage and standard of living to that which the recruit was accustomed before enlistment. After the end of the War, Category (iii) lost a great many of its components to the new Category (ii) so that, in effect, the Army to-day is attempting to obtain the same number of men from reduced resources. Or put another way, the Army to-day offers a wage and standard of living below the standard which is enjoyed by the men

whom it is encouraging to join. Therefore, if the Army is to have pre-1914 resources from which to recruit, it must include a proportion of the new Category (ii) in its recruiting hunting-ground. The problem then clarifies itself. To attract recruits from Category (ii) the Army must offer a wage and standard of living at least equal to that which the would-be recruit enjoys before enlistment. The problem of attracting the unemployed recruit is exactly similar in regard to wages and, in practical effect, in regard to standard of living. The wage which must be offered to the unemployed man must be such that on enlistment he can provide as much to the family weekly budget as he did before enlistment. This applies equally to the employed recruit who is unlikely to leave a civilian job, however uncongenial, if he will be unable to render financial assistance to his family after enlistment.

It has been stated from an authoritative source which the writer hesitates to question, that the standard of pay in the Army compares favourably with civilian wages if the considerations of clothing, housing and feeding are taken into account. Theoretically this may be the case, but in practice Army pay compares unfavourably with civilian wages and even unemployment benefit.

In order to draw a comparison, consider the case of the unemployed man who may be described as being on the lowest scale of civilian wages. Inquiries show that the average unemployed man subscribes at least twelve shillings per week to the family budget. His housing cost is negligible; the cost of his clothing very small and an extra mouth to feed in the average family makes no very great difference. If he joins the Army the house is still there, the man still has to purchase much more expensive civilian clothing, but the family does not have to feed him. If the man stays at home there is always the chance of a good job turning up and, in the meanwhile, he puts more into the family purse than he takes out. Again, should a man marry at twenty-one on the dole he gets marriage allowance, but in the Army he gets nothing until he is twenty-six. The same man joins the Army and after a year's service can earn up to eighteen shillings per week. In addition he gets an allowance for clothing which scarcely keeps up his original free issue. But this man does not receive his full pay. He is put under "stoppages" for such items as laundry, barber, subscriptions to squadron, battery or company funds and probably also to a Regimental Association Fund. He has to buy cleaning material. He has to pay for the fitting of his uniform. One inspection by the General Officer Commanding and a quarter's clothing allowance is gone. Life in the Army is intolerable without pocket money of at least twelve shillings per week. Thus the man's family gets nothing. It may be contended

that the man's standard of living has been raised but this does not counterbalance the almost completely penurious state of the present soldier. Then it must be remembered that many of a soldier's first six years of service are done abroad. The wage is very inadequate when offset against the risks to life, health and limb in such places as the North-West Frontier and police duties in Palestine and the bazaars of India. True a pension is available in case of injury, but man lives for the present and there is little joy in a small pension and one leg.

Having compared the standard of wages, consider now the standard of living in the Army with that in civilian life. As already stated the standard offered in the Army must be such as to spread the net into Category (ii). Incidentally, too, such a standard will be all the more attractive to Category (iii). It is considered that the main essentials of this standard of living are as follows :

Housing.—Barrack accommodation should provide :—

(i) Comfortable and warm barrack rooms centrally heated.

(ii) Reasonable privacy as a private soldier, with increased convenience in this respect as an N.C.O.

(iii) A comfortable common-room in close proximity to barrack room and not two hundred yards across a dark, rain and wind swept square. A suitable scale could be one common-room to every two barrack rooms or sixty men approximately.

(iv) Latrine and ablution facilities in close proximity to barrack rooms. Ablution rooms should be fitted with hot and cold water. The practice of having to try and coax a reluctant Cook-Sergeant to let you have a mug of hot water " for shaving " from the Brigade or Battalion Cook-house is degrading, as also is the practice of only being able to wash the hands in hot water at your weekly bath.

(v) Suitable furniture and fittings for the accommodation of uniform and mufti clothing. The barrack-box or metal wall-cupboard are anachronisms.

(vi) A considerable increase in married quarters to allow of at least thirty per cent. married personnel to live in quarters. Such quarters to be built on the lines of corporation flats.

(vii) An adequate fuel supply for the heating of water and barrack rooms. The present scale should be increased by one-third.

Feeding.—The standard of messing taken all round is satisfactory, but the messing allowance could with advantage be raised to permit of a better third meal and the provision of more variety in vegetables.

Increased allowances should be given for camp and manœuvres. At present it is necessary to save money in barracks at the expense of the standard of messing in order to provide the extra food required in camp and on manœuvres.

Clothing.—Clothing should fulfill the following conditions :—

(i) For active service, camp and manœuvres a khaki uniform, serviceable, comfortable, inexpensive in upkeep and fitting.

(ii) For barracks and ceremonial occasions, blue of present approved pattern.

(iii) For " Mounted " parades in mechanized units and fatigues, canvas boiler suits, which should be a free issue.

(iv) Clothing allowance should be adequate to cover all charges.

General Army Routine.—(i) " Employments " other than those of a strictly military character should be carried out by civilian labour. The following employments are not considered suitable for a soldier : washing-up in messes and canteens ; sanitary orderly ; waiters in messes ; gardeners ; garrison firemen. The following tasks are not considered suitable for soldiers : polishing floors and windows ; weeding roads and parade grounds ; scrubbing cook-house and canteen floors ; coal fatigues and cleaning latrines.

Recently great damage to recruiting was done in a certain town by a soldier on furlough broadcasting the fact that he had been twelve months as washer-up in the Officers' Mess and was contemplating desertion.

Barracks and their surroundings should be kept clean by a civilian sanitary squad, and the soldier should be required to do little more than make his bed and do his drills and training.

(ii) Guards and picquets should only be mounted if they serve some actual military necessity or on camp and manœuvres for training purposes. Exceptions should be made of ceremonial guards of an historic or national character. Night-watchmen (enlisted soldiers) should be substituted, and the ordinary night-watchman's tell-tale clock of civilian life substituted for Orderly Officers' and N.C.O.'s visits. Men employed as night-watchmen must be excused duty the following day.

(iii) Hours of work must be regular and the day limited to an eight hour one, except on manœuvres or when in training camps. The period between Reveille and first parade should not be counted as part of the eight hours, since this period is common to all modes of life and is not counted as part of the working day.

If for any reason, such as shortage of vehicles or trained drivers, it is necessary to work overtime, this overtime should be offset the following day.

(iv) Confinement to barracks for such duty as fire-picquet must be reduced to a minimum.

(v) Volunteer evening classes should be arranged on similar lines to " Evening continuation classes."

(vi) The sole requirement of a soldier should be that he must always appear at the time and place ordered by his Commanding Officer, and reasonable notice should be given to him. The hour of his return to barracks or whether he sleeps in barracks should be left to his own discretion. Soldiers who abuse the privilege should not be retained in the Service.

(vii) Compulsory church parades should be limited to one per month.

(viii) Every man should be required to attend a court-martial in his early service under instruction. Lack of knowledge in this respect leads to unnecessary fear of military law and a consequent sense of oppression.

(ix) Lectures and education should take place in properly warmed rooms. Modern barracks greatly lack such facilities and old ones have none at all.

Terms of Service:—(i) The maximum tour of foreign service at a time should be three years. Two years would be even more preferable but presumably the cost would be prohibitive.

(ii) Under no circumstances should a man be required to serve abroad in the last twelve months of his service. The present practice of terminating a man's service on the quay at Southampton has done much damage to recruiting.

(iii) The vocational training system should be extended, so that all men who wish to, can learn a trade in the last year of service. The length of the course should be dependent upon the length of service. The rule should be " the longer the service, the longer the course." Thus, for example, men who do six years service would receive a four months course, whilst men with twelve years service would receive a course of from nine to twelve months. This would ensure that the older man had a fair chance with the younger.

(iv) Whilst it is impossible that the Government should guarantee work to ex-soldiers, sailors and airmen, preference should be given in all Government departments and vocational training courses should fit the men to occupy such posts.

Miscellaneous.—(i) Large military stations such as Aldershot and Salisbury Plain are definitely unpopular and have a seriously adverse effect on recruiting.

(ii) Discomforts of troopships lose nothing in the writing in letters home.

Conclusion.—Even though the above suggestions or some of them find favour it is not anticipated that their adoption would show a very great improvement immediately. The shortage of men in the Army has thrown a great strain and much extra work on those who are in it. This fact has naturally a considerable circulation and the Army is faced with bringing in radical reforms in its mode of life and living down its reputation for little thanks for services rendered.

Since the War, the Army has fallen behind in the race for social advancement chiefly on account of lack of funds, but also partly because the Army itself has failed to realize the magnitude of the new problems caused by the upheaval in social conditions in the last decade.

A voluntary Army cannot be kept in a state of suspended animation. It cannot maintain its enthusiasm or attract enthusiasts to its ranks on a subsistence wage and standard of living, lest one day it may be wanted. The country must face the facts.

UNIFORMS, EQUIPMENTS, STANDARDS AND COLOURS OF THE BRITISH ARMY

THE work of compiling a summary of the old uniforms, equipments, standards and colours of the British Army is proceeding. It is being co-ordinated by a committee presided over by General Sir Robert Whigham, G.C.B., K.C.M.G., D.S.O., on which the War Office, the Royal United Service Institution, and the Society for Army Historical Research are represented. The Regimental Representatives are all Associate Members.

The Committee are relying mainly on the Regimental Representatives for the collection of information, and a number of useful reports have already been received.

The Summary is being produced at the Royal United Service Institution as sufficient reports are received, and a copy of that part of it which affects his unit will be sent to each of the Regimental Representatives.

In addition, the Society for Army Historical Research have lately formed a Museums Committee, and the latter have arranged for an expert to visit Regimental Museums to help in identifying and classifying exhibits ; it is hoped that this will also assist Regimental representatives in compiling their records.

REGIMENTAL MUSEUMS

The formation of the Museums Committee of the Society for Army Historical Research was notified in A.C.I. 338 of 1936. This stated that the committee was formed for the purpose of giving advice when called on to the custodians of regimental museums. The committee will deal with all subjects in connection with museums : authenticity, value, arrangement, cataloguing, renovation and preservation of exhibits, bringing to notice objects of interest on the market or in other museums, and generally circulating information on the subject of military antiquities preserved in museums.

All communications should be addressed to :—

The Society for Army Historical Research (Museums Committee),
c/o The Library,
The War Office,
Whitehall, S.W.1.

THE INTERNATIONAL SITUATION

THE POWERS AND SPAIN

LONDON appears to be stealing the limelight from Geneva, and Continental Powers seem more and more inclined to turn to Britain in time of international danger. Whether this will add more to our prestige than to our embarrassments only time and events can show.

The International Committee for the application of the Agreement regarding Non-Intervention in Spain held its first meeting in London on 9th September; twenty-six European countries were represented; Portugal was an absentee. Up to the end of January the Committee had effected very little. It could not, in practice, stop the import of arms to both sides, or induce the Governments of France and Soviet Russia to prevent active support being given to the so-called Spanish government, or restrain Germany and Italy from giving active assistance to General Franco. France has been unwilling openly to oppose her powerful military ally whose policy it is to promote communism in Spain, while Germany and Italy are at one in their determination that, whatever the outcome of the civil war, a Red regime shall not be established in that country. In this, the latter have the sympathetic co-operation of Portugal.

Such being the conditions, much lip service has been paid to "non-intervention"; but for four months, it has been honoured more in the breech than the observance: French, Russian, German, Italian, and even British and Irish volunteers are known to be actively participating in the fighting.

Within a month of this first meeting of the Committee, the process of protest and counter-protest—so familiar at Geneva—started. Soviet Russia began by making categorical accusations against Germany, Italy, and Portugal, that they had violated the non-intervention agreement, and she threatened that unless measures were taken to prevent this, she would regard herself as being released from all obligations in that connection. At a meeting of the Committee on 9th October to investi-

gate these allegations, the representatives of Italy, Germany, and Portugal warmly repudiated them, and the Soviet representative equally repudiated the allegations made against his Government.

On 13th October, the Soviet Chargé d'Affaires presented a further Note to Lord Plymouth as Chairman of the Committee accusing Portugal of assisting the insurgents, and suggesting that the British or French navies should establish control over Portuguese ports. Lord Plymouth refused to summon the members specially to consider such a request.

It was the Spanish Government's turn to lodge the next complaint, which arrived on 20th October. Again Germany and Italy were alleged to be providing Franco with weapons of war. Four days later the Committee met to consider a note from the Soviet Government saying that the latter could not, in future, be bound by the Non-Intervention Agreement to any greater extent than any of the other participants. Germany and Italy made counter-accusations that Russia had supplied Franco's enemies with aircraft, tanks, ordnance and munitions. The Committee appeared to have reached an *impasse*, but a diplomatic loophole was discovered, and the Soviet Ambassador undertook to inform Moscow that its members regarded the Russian declaration as ambiguous—which, perhaps, it was intended to be!

Portugal evidently felt that it was time she delivered a counter-attack, and on 27th October she protested that Britain had not "kept to the rules" in bringing before the Committee charges against her of which there was insufficient evidence. She, too, reserved the right to withdraw whenever she wished.

On 28th October the Committee issued a *communiqué* stating that the Soviet allegations of breach of the Agreement by Italy and Portugal had not been proved.

THE ANGLO-FRENCH EFFORT TO ELIMINATE INTERVENTION

On 9th December an effort to get the Powers most closely concerned to take joint action with a view to terminating the Civil War in Spain and relieving the international tension it is causing, was made by Britain and France in a *communiqué* addressed to Germany, Italy, Portugal, and Soviet Russia. This proposed that they should make a general declaration of their determination to renounce strictly all direct or indirect intervention in the conflict, and that their representatives on the London Committee should be given instructions with a view to the organization of a fully effective control.

The German and Italian replies were received on 12th December. Both were favourable in principle; but both doubted the possibility of arranging a calm plebiscite in Spain under existing conditions. Ger-

many remarked that a reconciliation with the Valencia government seemed hardly conceivable. Portugal was less responsive. She maintained that she, unlike certain other Powers, had fulfilled her engagements ; she was not a manufacturer of arms, and being threatened with international communism could not supply arms to anyone ; the proposed mediators were not totally neutral or impartial ; any electorial procedure (in Spain) would not guarantee a minimum of liberty to those who did not resort to terrorism.

The Soviet Reply was handed to the British and French Ambassadors in Moscow on 29th December. It was favourable to the Franco-British proposals and expressed the desire that measures should be taken to give effect to them at the earliest possible moment, " whether the rebel Generals agree or not."

The fact is that the Soviet government believes that if the ring were cleared of all foreign support to either side, Franco would go down and Communism would triumph. Germany, Italy, and Portugal are apprehensive of this, and are not prepared to stand aside and allow it to happen.

Not to be discouraged, on 9th January, the British Government sent a further Note which, in effect, invited the other Powers concerned to take simultaneous and early steps to stop the recruitment of volunteers for Spain. By way of setting a good example they also announced that they would apply the Foreign Enlistment Act of 1870 in connection with the Civil War. This means that our own nationals are now prohibited from volunteering for service in that country.

France replied that she is prepared to apply all measures necessary to prevent enrolment and recruiting for Spain without delay, provided that the other governments concerned do the same. At the same time her government issued a warning that such measures would be ineffective without an agreed system to control war material, and reserved the right to repudiate the engagement if such a system was not forthcoming within a reasonable time.

M. Litvinoff as Soviet Commissar for Foreign Affairs expressed readiness to take action simultaneously with the other Members of the London Committee ; but to do so before would be " a one-sided measure" to the advantage of the insurgents. He naïvely added that the Soviet government do not, even now, make a practice of sending " volunteer detachments " to Spain.

On 25th January, the German and Italian replies were received. These showed obvious signs of collaboration, and were to the effect that while both Powers accepted the proposals for a general ban on volunteers,

they urged that all foreign volunteers, agitators, and propagandists should be withdrawn from Spain and that international control should prevent every possibility of intervention in Spain.

This has set the Non-Intervention Committee a formidable problem which is not likely to be solved at a very early date. Meanwhile, however futile its deliberations may seem, the existence of this Committee has at any rate kept the Powers talking—if only in circles, and thus provided some outlet for their divers interests, intrigues, and indignations. If, thereby, it succeeds in preventing a general conflagration, it will have proved at least an efficient substitute for the League of Nations.

THE SPANISH CIVIL WAR

The chief feature of the Spanish Civil War since the publication of the November JOURNAL has been the stalemate in front of Madrid and the gradual recovery of the Government forces. At the beginning of November, 1936, General Franco's troops seemed to be sweeping all before them and the fall of Madrid appeared to be a matter of a few days only. On 4th November, the Nationalist forces captured the Getafe airport, the Croydon of Madrid. Two days later, the Spanish Government, anticipating the early fall of the capital, withdrew to an unnamed village near Valencia leaving General Miaja in control of the defence.

The Nationalist forces delivered a general assault on 7th and 8th November, but, after fierce fighting, were held up on the general line of the Manzanares stream, just West of the city. This brook, though only a slight handicap to infantry, seems to serve as an efficient anti-tank obstacle, possibly owing to the steepness of the banks.

Bad weather put a temporary stop to operations on the Madrid front, and snow and bitter winds caused much discomfort to both sides, but the Marxist Militia, being accommodated in buildings during their periods of rest may have suffered less sickness than the insurgent troops, who were mostly in bivouacs.

The fighting flared up again during the first week in December and on 5th December, the Government forces claimed to have repulsed all assaults and to have delivered a successful counter-attack. Amidst the welter of claim and counter-claim, the truth is not easy to arrive at, but in this instance there seems no reason to doubt the accuracy of the Government communiqué. Furthermore the relative inactivity of the

insurgent air force at this time gives weight to the Government claim to have destroyed fifteen rebel planes in air-fighting.

These aerial combats are of more than local significance as they constitute trials, under war conditions, of the various types of aircraft of several Continental powers used by the belligerents.

Due largely to the heroic resistance of the Government forces, the crisis of the action had passed by 9th November. General José Miaja was able to state that "if necessary, the capital can hold out for a year."

Five days later, the insurgent planes delivered the worst air raid since the outbreak of war. Quantities of bombs were rained on the city, over two hundred persons—mostly women and children—were killed and wounded and public buildings, hotels, two railway stations, and many houses were damaged. Streets were torn up, water mains burst, and general confusion reigned. Much adverse criticism has been levelled at General Franco for this and other air raids, but in fairness to the insurgents, it must be realized that he had offered to create a neutral zone for non-combatants, and cannot be held responsible if the Government choose to turn Madrid into a defended locality. On another occasion the British Embassy, which is situated in the neutral zone, was damaged by bombs and there were several casualties. Subsequently, General Franco stated that all his aircraft were employed elsewhere at the time, and could not have been responsible for this attack.

The German and Italian Governments announced on 19th November their recognition of General Franco's Administration as the *ipso facto* government of Spain, and their intention to despatch diplomatic representatives to his headquarters. This, no doubt, was intended to counter the powerful influence of Soviet Russia's Ambassador, who had fled with the rival government to Valencia.

Mr. Eden, when questioned on this subject in the House of Commons, stated that "the action was not a breach of the non-intervention agreement and should not invalidate the work of the Committee. So far as non-intervention is concerned, I say categorically that I think there are other Governments more to blame than those of Germany and Italy."

As a consequence of the recognition of General Franco by Germany and Italy, the Spanish Government protested to the League of Nations, invoking Article 11 of the Covenant, by which Member States have the right of calling the attention of the League to any circumstances which threaten to disturb international peace. In the light of the Italo-Abyssinian war, it is not to be expected that this protest will have any effect whatever on the subsequent course of events.

General Franco's forces launched fresh attacks early in January against Madrid. Heavy fighting took place on the general line Escorial–Madrid, North-West of the Capital, and German volunteers were reported to be playing a prominent part in these insurgent offensives. The continued insistence of the rebels in their attacks North of the city is difficult to understand as strategy appears to dictate an entirely different line of approach. The weak point in the defender's line would seem to be in the area South of the Capital, where the communications between Madrid and Valencia could be severed. A victory for the rebels here appears to offer far greater advantages than the isolation of the Escorial or a tactical gain of a few miles in the northern sector. The insurgent attacks, after short advances, were held up by the fire of the defence, and by a fresh break in the weather.

The Government troops are no longer the undisciplined rabble which took the field in July, 1936. They have been re-equipped and provided with new aircraft and tanks and above all, with new leaders. Their discipline has improved, and backed up by the so-called International Brigade—in reality a Division, the Militias are capable of offering a really effective resistance, though an offensive role may not yet be within their capabilities.

THE CAMPAIGN IN THE NORTH

The deadlock in the Asturias has shown signs of breaking in favour of the Government forces, who have succeeded in completely encircling and besieging Oviedo. The position of the insurgent troops in this region is believed to be precarious, and they are holding their ground with increasing difficulty.

CATALONIA

The " private " war on the Huesca front has not been in the news of late, and we may deduce that the Catalans have been persuaded to abandon their attacks in this quarter and to devote their energies to the dispatch of reinforcements to the main front at Madrid.

Señor Companys, President of Catalonia, issued a decree on 8th December providing for the raising of a regular Army, to consist of nine regiments of infantry, three regiments of artillery, three divisional reconnaissance detachments, three detachments of engineers, and a medical and sanitary corps. No mention is made of any Army Service Corps units and, if continued reliance is to be placed on improvised measures for supply and transport, future operations of an offensive character are not likely to prosper. The reign of terror in Barcelona is reported to be dying down ; 4,000 victims are alleged to have been

murdered since July last, and the fury of the mob is believed to have spent itself.

THE WAR AT SEA

General Franco informed the British Admiralty on 19th November that, in view of the Nationalist blockade of Spanish Government ports, neutral ships could be assured of safety only in certain areas off Valencia, Tarragona, Alicante and Cartagena. No safe zone was specified for Barcelona. The Teneriffe radio further broadcast a statement that the French and Russian Governments had been informed that all ships transporting armaments to Spain would be sunk.

Rear-Admiral G. H. D. Lyon, commanding the Third Cruiser Squadron in the Mediterranean, was notified on 26th November by the military governor of Majorca, that the Burgos National Government had agreed to establish a zone for foreign shipping at Barcelona.

News reached Moscow on 20th December that the Soviet steamer "Komsomol" (5,000 tons) had been sunk by the insurgents in the Mediterranean. This evoked a storm of indignation in the U.S.S.R. and tended to increase an already dangerous state of tension; but the Russian navy is hardly in a position to exercise much real influence in Spanish waters.

Just a week later, the Basque government seized the German ship "Palos," discharged part of her cargo which was alleged to be war material, and detained a Spaniard who was on board. In this case the reprisals were vigorous and effective: two days later the cruiser "Königsberg" appeared on the scene, demanded and secured the release of the "Palos." The German government demanded full and satisfactory settlement for the seizure, and the steamer "Aragon" was detained by the battleship "Admiral von Spee." Another Spanish steamer—the "Soton," ran aground after being overhauled by the "Königsberg," and on 3rd January that cruiser detained the "Marta Juquera," although she was in territorial waters. A bombastic order was sent by the Spanish government that their warships and aeroplanes were "to use the most energetic means at their disposal" if German warships continued to use force against Spanish merchantmen; but so far the idea of trying conclusions with such formidable opponents has not appealed to the ill-disciplined crews and communist commanders of what is left of the "government" fleet; and on 8th January, the time limit given to the Basque government having expired without satisfaction having been received, the German government announced that they were disposing of the two "Red" vessels. They have been turned over to Franco, their crews being landed in Valencia by the courtesy of a British destroyer.

GERMANY AND SPANISH MOROCCO

Much perturbation was caused in France by reports that Germany was actively engaged in military as well as commercial infiltration into Spanish Morocco, with the object of securing a permanent foothold there. It was pointedly announced that the French Mediterranean and Atlantic Fleets would be leaving shortly for a series of exercises along the Mediterranean littoral and West Coasts of Africa respectively "as in every other year . . . ." But on 11th January this new "flare up" was damped down by a categorical assurance by Hitler to the French Ambassador in Berlin that Germany had no intention of violating the integrity of Spain or her possessions. It was also arranged that facilities should be given to French and British officers to make an unrestricted inspection and inquiry on the spot to establish the emptiness of the rumour.

In an uncensored report which appeared in *The Times* of 18th January, a Special Correspondent, who had travelled the whole length of the Spanish Zone, stated that although he saw no sign of German military occupation in the full sense of the word, yet he had seen many signs of German influence and of the use of the Zone as a base for air operations. He was given a pass which admitted him everywhere except to the air station at Melilla. In this town were a number of young Germans who, in his opinion, were fully trained military airmen co-operating with Franco. "All the inland garrisons are wholly Spanish and the new recruits are trained by Spanish officers. But air activity is almost wholly German and is far from being purely commercial."

ITALY AND THE MEDITERRANEAN

By Major E. W. Polson Newman

IN the Mediterranean the Italians fully realize the necessity for British friendship. As the British and Italian lines of communication through the Suez Canal and Red Sea are identical, the two nations can either help each other to their mutual benefit or hurt each other, with disastrous results. The same applies to the Mediterranean itself, where freedom of transit to the outside world is of the greatest importance to Italy. If a free exit from the Mediterranean was vital to Italy before the Abyssinian war, it is still more vital to-day. For this reason the Italians have been somewhat suspicious of some aspects of British policy. They feared that they might be isolated and restricted in what they regard as their home sea. Yet, in general terms, they want nothing

more than that their rights and interests should be recognized and respected. In the Anglo-Italian Mediterranean Agreement assurances which have been given on both sides should allay the suspicions that have cropped up during the past year.

Italian communications in the Mediterranean are—(1) the Italian East-African route to Massawa and Mogadishu—ports for Abyssinia; and (2) the Italian transit route from Italy to Libya. While Italy controls no outlet from the sea by which she is enclosed, and largely depends on her ex-Mediterranean trade, the communications with her East-African possessions are also under the control of others. The same applies to her merchant shipping services with America, South Africa, and the Far East. Hence, it is essential to the Italians that they should have complete freedom of transit throughout the Mediterranean and Red Seas. As Italian tonnage now comes second in the Suez Canal returns, the Italians feel that the time is approaching when they should be represented on the Board of Directors. Their tonnage entitles them to this. But Italian communications with Libya are also of importance, especially in view of a possible air route connecting the two parts of the Italian Empire via the Sudan.

British interests in the Mediterranean are protected by the Navy, based on Gibraltar and Malta, with British troops and aircraft in Gibraltar, Malta, Egypt, and Palestine. Italy has her naval, military, and air forces distributed between the mother country, Libya, the island of Pantelleria, Rhodes, and the island of Leros in the Dodecanese. Geographically, Pantelleria, between Sicily and Tripoli, is the Italian counterpart of Malta, just as, further East, Cyprus is the British counterpart of Rhodes and the Dodecanese. Although Cyprus has hitherto played an insignificant part in the British defensive scheme, it is likely to become important in the future owing to the new Anglo-Egyptian Treaty and British interests in the eastern Mediterranean. Rhodes is of special importance to Italy as a half-way house to Smyrna and Alexandretta, and on account of Italy's important trade with Turkey. The island also flanks the route to the Straits.

As far as communications are concerned, Italian interests are almost identical with ours in principle, if not in actual detail. In other respects they are chiefly concerned with Italian supremacy in the Adriatic and commercial interests in Turkey, Egypt, and the Levant. Besides having probably the largest foreign community in Egypt, Italy has an extensive service of steamships in the eastern Mediterranean, and pursues a policy of eastern economic penetration. In the Adriatic there is no conflict between British and Italian policy, provided that tranquillity is preserved, nor is there any British objection to Italian economic penetration eastward or in Egypt as long as political forces are not introduced.

Among the suspicions that have prevailed on the British side has been a feeling in certain quarters that Italy has aggressive designs in the Mediterranean. There are ample and obvious reasons, political and economic, why this cannot be the case ; and I have it on the highest possible authority that Italy wants and needs peace. Any idea that Italy has designs on Egypt, can be discounted by the fact that plenty of cotton can now be grown in Abyssinia, and that Egypt is already over-populated. Although a glance at the map shows Egypt and the Sudan as a tempting fill-up for a greater and more compact Italian Empire in Africa, such a project is entirely outside the sphere of possibility at present, and will remain so for a long time to come. Italy, on the other hand, has suspected an attempt to isolate her and restrict her activities in the Mediterranean, and thought that Britain might possibly follow a policy of playing her against France and vice versa. Britain's defensive agreements with Mediterranean Powers for protection during the sanctions period also caused Italy to fear possible combinations against her in the future. For this reason, and because of anxiety about British policy regarding the Dardanelles, the Italians disliked the meeting last summer between King Edward VIII and Mustapha Kemal at Istambul. In her determined opposition to Communism, Italy is deeply concerned about Russia, Turkey, and those Straits, in view of Russia's present action in Spain. This affects two of the Mediterranean outlets—Gibraltar and the Dardanelles. With Communism a danger in Greece and the future of Turkey uncertain, the position in Spain is regarded by Italians as a threat to their vital interests. They are surprised that Britain takes this Russian threat in the East and West so casually.

In Spain there is one point on which the Italians are determined : they will not tolerate a Communist regime in Catalonia. A Russian foothold there, with the Russian Black Sea fleet free to enter the Mediterranean through the Dardanelles, is more than Italy will stand. But, although there are Italian volunteers in Spain and the Balearic Islands, and Italian aeroplanes and war material with General Franco's army, I was assured in Rome by a high authority that Italy would do all she could to bring the Spanish civil war to a speedy end. The Italians have no designs on any Spanish territory or islands, and are anxious that Spain should not be allowed to create an obstacle to the fullest resumption of friendly relations with Britain.

If the Mediterranean is vital to Britain as the most direct sea route to India and the Far East, it is still more vital to Italy as her only line of sea communications with her East-African possessions and the outside world in general. Although Italy is conscious of the fact that she is at present the strongest and most stable of the Continental Powers in the Mediterranean, she has no aggressive designs and heartily welcomes an

understanding with Britain. Owing to her new conquests, her need for peace is obvious. Any important conflict in the Mediterranean or Red Sea area would not only threaten her own vital communications with the outside world, but would endanger her contact with her newly acquired possessions in North-East Africa. Furthermore, any European conflict in which Italy might be involved would bring Abyssinian development to a complete standstill, if it did not actually endanger Italy's hold on that country.

THE ANGLO-EGYPTIAN TREATY

THE Anglo-Egyptian Treaty was signed at the Foreign Office on 26th August, 1936. This document, whose terms were announced simultaneously in London and Cairo, comprises seventeen articles and (theoretically) terminates the fifty-year occupation of Egypt by British forces. The chief provisions of it are as follows :—

The Alliance.—The two contracting parties establish an alliance with a view to consolidating their friendship, cordial understanding, and good relations. Each country undertakes not to adopt an attitude which is inconsistent with the alliance. The two countries will, in future, be represented by Ambassadors in London and Cairo, and Britain will support Egypt's application for membership of the League of Nations.

Aid in War.—In the event of either nation becoming involved in war, the non-combatant nation is pledged to give help as an ally, subject to the obligations which may fall upon either of the two countries under the League of Nations and the Kellogg Pact.

The Suez Canal.—In view of the fact that the Suez Canal is a universal means of communication and is of particular importance to the British Empire, British troops are to be stationed in its vicinity in order to ensure, with Egyptian co-operation, the defence of that water-way. The presence of these troops does not constitute an occupation and will in no way prejudice Egyptian Sovereignty.

At the end of twenty years, the position in the Canal Zone will be reviewed. If, owing to the growth of the Egyptian Army, the support of British troops is no longer required, the latter will be withdrawn. In the event of disagreement on this point, the question is to be submitted for decision to the League of Nations.

Not more than 10,000 British troops and 400 R.A.F. pilots may be maintained in the Zone. Military forces will be stationed at Moascar and in the Geneifa area, while R.A.F. stations are to be within five miles of the Port Said-Suez railway from Kantara to the junction of the Suez-Cairo and Suez-Ismailia railways. The necessary barracks, lands, and

amenities will be supplied by the Egyptian Government, who also agree to maintain roads, railways and bridges necessary for strategic purposes.

Military and Aerial Facilities.—The Egyptian Government will maintain adequate landing grounds and seaplane anchorages, and will co-operate in providing any additional facilities. British officers may visit the Western Desert for the purposes of studying the terrain, provided they wear plain clothes. British troops are to evacuate Alexandria within eight years.

The Sudan.—The Governor-General of the Sudan will continue to represent both Britain and Egypt in that country. In making new appointments for which qualified Sudanese are not available he will select candidates of British or Egyptian nationality. The garrison of the Sudan will include British, Egyptian, and Sudanese troops. No restrictions on the immigration of Egyptians or their freedom in matters of commerce are to be imposed.

Capitulations.—The responsibility for the safety of foreigners in Egypt will in future devolve entirely upon the Egyptian Government, and the British Government agrees that the capitulatory regime is no longer in accordance with modern conditions. The abolition of the Capitulations and the application of Egyptian laws (including financial legislation) to foreigners is foreshadowed.

Disputes.—Any differences which may arise between the United Kingdom and Egypt are to be dealt with by direct negotiation, but in the event of a deadlock the point at issue shall be decided in accordance with the Covenant of the League of Nations.

Appendices

His Majesty the King will be the first foreign Sovereign to be represented in Egypt by an Ambassador, who will be considered senior to other foreign diplomatic representatives.

The Treaty includes several appendices, in which certain communications received from Nahas Pasha, Prime Minister of Egypt, are placed on record. The chief points are :—

The Inspector-General and all British personnel are to be withdrawn from the Egyptian Army and will be replaced by a British Military Mission, which will be responsible for advising Egypt on military matters. The Egyptian Government agree to the employment of British military and air instructors and are to send selected Egyptian personnel to the United Kingdom for training.

The European element in the Police is to be gradually reduced, and at the end of five years, will be entirely eliminated.

CORRESPONDENCE

[*Correspondence is invited on subjects which have been dealt with in the* JOURNAL, *or which are of general interest to the Services. Correspondents are requested to put their views as concisely as possible, but publication of letters will be dependent on the space available in each number of the* JOURNAL.—EDITOR.]

THE R.N.R. AND THE MERCHANT NAVY

TO THE EDITOR OF THE R.U.S.I. JOURNAL.

SIR,—Those who heard the Discussion in our theatre between Admiral Sir George Chetwode—until lately Admiral Commanding the Reserves, and Mr. E. H. Watts of the Shipping Federation, must have been left in a state of bewilderment. It was remarkable that two such authorities should have been in such strong disagreement over the plain question as to whether the Merchant Navy will or will not be able to spare the personnel for the Royal Naval Reserve on which the Admiralty are relying in the event of a future war.[1]

There appears, however, to be a possible explanation of the discrepancy between their opinions. Admiral Chetwode relied for his figures largely on the Registrar-General of Shipping, who, doubtless, is in harmony with the Ministry of Labour; Mr. Watts quoted the reports received from the port offices of the Shipping Federation. The two former may have on their books seamen who are incapacitated or who are too old, or unwilling to go to sea, at any rate *in peace time;* they, doubtless, also have men who choose their own ship and who prefer to wait until they can sign on where they want to, and men who wish to have a spell ashore before embarking again. An appreciable number from these categories would be available *in war time.* The offices of the Shipping Federation, naturally, register men who are actually waiting for berths.

It may have been overlooked, too, that Admiral Chetwode qualified his claim that 10,000 men could easily be spared by the Merchant Navy by saying that " as far as the deep-sea ship is concerned, the general service section of the R.N.R. only takes some 2,000 men." These would, automatically, be spread over a large number of ships, and his implication that their places could be filled from sources not registered by the Shipping Federation is doubtless correct.

Nevertheless, the impression left by this Discussion and also by Sir Archibald Hurd's lecture on " Merchant Shipping To-day " is that, from one cause or another, the resources of professional seamen in the country are dwindling seriously. The matter is of such vital importance that it would seem to call for a Government enquiry.

E. ALTHAM,
Captain R.N.

1st February, 1937.

---

[1] See Lecture on " Food Supplies in War Time," p. 64 *et seq.*, of this JOURNAL.

SERVICE PROBLEMS IN PALESTINE

To the Editor of the R.U.S.I. Journal.

Sir,—The article entitled "Service Problems in Palestine" contains such serious inaccuracies as regards military operations that I hope you will give me the opportunity to correct them. "A Correspondent in Jerusalem" has obviously made no effort to verify his facts and has made most sweeping assertions on the basis of isolated incidents. In justice to the troops engaged in these arduous operations, I consider it my duty to give a true account of the incidents in question.

During most of the summer I was commanding the whole of the Northern Administrative Area of Palestine, and up to the end of the operations I was commanding a considerable area in the North. As a result it was my duty to investigate in detail every action that took place in my area, and in addition I was present at a certain number of them.

I will deal with the inaccuracies as they occur in the article.

(1) There was no such engagement as the "Acre–Rosh Pina" engagement. Acre and Rosh Pina are over thirty miles apart by road. On the day in question two separate engagements took place: one was near Tarshiha (fifteen miles from Acre by road), and the other a few miles North of Rosh Pina. There was no connection between the two except that detachments of the same battalion were engaged in both operations.

(2) The lorry that was fired at was not on the Acre–Naharya road, nor was there any fighting on that road. It was on the Acre–Tarsihha road about two miles West of Tarshiha. It was here that the engagement took place.

(3) No aircraft were sent from Haifa for the simple reason that throughout the operations no service aircraft were stationed at Haifa. The aircraft that took part in this operation were sent from Samakh.

(4) The statement that most of the British Army casualties occurred while clearing away road blocks is palpably absurd, and is a serious reflection on the leadership and training of the forces engaged. Troops were taught never to attempt to remove road blocks until either strong covering fire had been arranged or the ground in the vicinity occupied. Not a single soldier was hit in my area while removing a road block.

(5) The statement that "very few of the Services were killed or wounded while in action" is meaningless, as any casualty caused by the enemy when on active service is "killed or wounded in action." What the writer is probably trying to convey is that very few casualties occurred when advancing against the enemy. Here again he is entirely at variance with facts. In the Northern Area 70 per cent. of the casualties occurred when advancing under a considerable volume of fire. It is only fair to the troops, who carried out these advances with great steadiness and determination, that these facts should be known.

Of the remaining 30 per cent. of casualties, the bulk were suffered by troops in lorries or on night patrol. On certain roads, before sufficient troops were available to provide piquets, there was always considerable risk to lorry traffic. It was naturally impossible to stop all movements of troops by M.T., and this risk was cheerfully faced by the troops concerned. Such casualties might legitimately be described as due to ambushes, but why they should be considered as not incurred in action it is difficult to conceive.

(6) The statement that the Arabs do not "stand up to any advance" requires qualification. It is quite true that as a general rule the Arabs were unwilling to

allow British troops to get to close quarters, but on occasion they resisted with considerable determination. For instance, during the engagement at Bala, on 3rd September, the troops (excluding R.A.F.) suffered the following casualties when advancing: two officers wounded, one other rank killed, and three other ranks wounded. The bulk of these casualties were incurred at about a hundred yards range or less. On numerous other occasions fighting took place in thick scrub or olive groves, and casualties were incurred and inflicted at a few yards range. On one occasion an officer using a revolver had a single-handed duel with an Arab with a rifle, and, luckily, scored with his last round. I hope these facts will dispel the fallacy that the troops never engaged in anything more serious than innocuous long-range fire fights with the Arabs.

A. B. BEAUMAN,
Brigadier.

Fulford Barracks, York,
December, 1936.

THE NEGLECT OF SEA POWER

TO THE EDITOR OF THE R.U.S.I. JOURNAL.

SIR,—No one is likely to dispute the main argument of Mr. Baxter's article on "The Neglect of Sea Power," but a few details seem to me to need comment.

In the first place, the fact that "only two groups of islands—Great Britain and Japan—have become important naval Powers" is surely due to the fact that these are the only two groups of islands having a sufficiently large homogeneous population to become important Powers at all.

My other criticisms all relate to the XVIIth century. It is an over-statement to say that the Commonwealth Navy "defeated the fleets of Holland, France, Spain, and Portugal." It never met a French fleet, save for one small detachment of nine ships, mainly small, and it never fought anything in the nature of a fleet action against the Spaniards: Stayner's action in 1656 and Blake's attack on Santa Cruz in 1657 were brilliant successes, but they were far from being defeats of the Spanish fleet as a whole. As for the Portuguese, there were two skirmishes off Lisbon in 1650, and the interception of the homeward-bound ships from Brazil—that is all.

Coming to the war of 1664–67, Mr. Baxter speaks of the capture of the Hamburg convoy "owing to the absence of an adequate escort." Since this convoy ran into the whole of the main Dutch fleet, nothing less than the entire English fleet would have been adequate. The mistake, if there was one, lay in failing to keep in touch with the main body of the enemy, not in providing too small an escort for a particular convoy.

With regard to the year 1666, opinions will probably continue to differ. To Mahan the division of the English fleet before the Four Days' Fight was "a great strategic blunder"; to Corbett it was "not a fault, because it was a necessity." A single fleet could not, in those days, be immediately available in both the Channel and the North Sea, and it was considered necessary to cover both Portsmouth and the Thames. The fact that the threat of the French fleet was largely imaginary does not affect the argument. It would be interesting to know what professional opinion nowadays considers ought to have been done.

R. C. ANDERSON.

AIR POWER AND ARMIES

To the Editor of the R.U.S.I. Journal.

Sir,—In the review of my book *Air Power and Armies* in the November issue of this Journal, there is one passage on which I am moved to utter a mild protest, only because it seems to me to be a flagrant example of a tendency which it was one of the main objects of the book to correct; namely, a tendency to dispersion of air effort—a failure to see the wood for the trees, and distinguish the one object on which the maximum available force should be concentrated.

Your reviewer takes me to task for suggesting that "The *primary* task of the *air striking force* (my italics) in a land battle must be to isolate the area attacked from enemy reinforcement and supply." And he describes as "a much greater and more positive role" of an air force with the armoured and mechanized army of the future, the functions of acting as "a vehicle for command, for air supply, by which alone, whether before or after battle, the mobility of such formations can be maintained; for reconnaissance; for direct aid in battle; and for pursuit."

Now, reconnaissance for the Army is not the job of the *air striking force*; I have devoted several pages to the importance of air action in the pursuit; and if the isolation of the battlefield from enemy reinforcement and supply is not direct aid in battle, I don't know what it is—unless your reviewer advocates the use of aircraft as short range artillery and machine guns in the forward zone, which I consider to be totally unsound.

But it is to the first two aspects of your reviewer's "much greater and more positive role" that I take the gravest exception: what would be said of a writer who claimed that the primary tasks of tanks in battle were to act as staff cars and supply lorries! Incidentally, although I think there is much to be said for the formation of a number of air supply companies in place of a possibly greater number of M.T. supply companies, I doubt whether your reviewer has any idea of the daily tonnage requirements of an armoured and mechanized force of any size. And I am sure he would not agree that the *air striking force* should be employed in carrying, say, 600 tons a day of petrol, ammunition and other supplies, instead of 600 tons of bombs.

I should be the last to lay claim to any great breadth of vision. But in complaining of my "somewhat restricted outlook" your reviewer seems to be under the impression that the subject of the book was air strategy in general, instead of the deliberately restricted subject of air action in "a campaign of which the primary object for the time being is the defeat of an enemy army in the field."

Rawalpindi, J. C. Slessor,
2nd January, 1937. *Wing Commander.*

THE NEED FOR A MINISTRY OF SUPPLY

To the Editor of the R.U.S.I. Journal.

Sir,—Presumably by coincidence, articles on "The Need for a Ministry of Supply" and "Recruiting and Unemployment" appeared adjacent to one another in the November Journal. The latter appears to me to answer in some measure one of the important problems of the former, viz., "labour."

Each of the three Services is becoming more and more technical, and consequently the personnel are more and more technical mechanicians of one character or another—officers, N.C.O.s, and men. When these men—each developed physically

to a high degree of fitness—leave the Colours, surely they are of potential value in that particular field of labour which produces the material to which they have become accustomed during their Service. The officers—Commissioned, Warrant, and non-Commissioned—could supply the inspectional and technical staffs, and the men could be absorbed in the production of the material they have been used to handling.

In vocational training, the men should be given every opportunity of learning the use of the productive machinery that they will subsequently be required to use.

Quarter Deck or Parade Ground discipline would, of course, have to be avoided, but service with the Colours would undoubtedly yield instinctive discipline sufficient to meet the requirements of the workshop, and when emergency arose the men would have that instinctive *esprit de corps* to give of their best for their brothers in arms.

This suggestion may be something of an ideal, but nevertheless, it seems to me to contain the nucleus of a solution of two problems. No doubt the Trade Unions would raise some objections, but they would surely not be insurmountable in these days of organized labour.

The question of Reservists being called up to rejoin the Colours in the emergency of War also arises. Some such scheme as this would appear to have the additional advantage that the Reservists would include men who were cognisant of the details of the latest type of weapon or machine when they rejoined. They could be graded so that, as and when they were called up, their places in the workshops could be filled by newcomers from factories and shops not producing war material.

Again, such a scheme would avoid a repetition of the heavy depletion of troops such as occurred in the Great War of 1914–18, when the Ministry of Munitions withdrew from the firing lines such large numbers of men to man the munition factories.

HAROLD B. TUFFILL,
Paymaster Commander R.N.R.

23rd November, 1936.

RECRUITING AND UNEMPLOYMENT

TO THE EDITOR OF THE R.U.S.I. JOURNAL.

SIR,—I have been interested in the article in the November JOURNAL on "Recruiting and Unemployment."[1] The author remarks (on page 743) that "this represents an increase of almost one in three in the number of lads who will attain the age of 18 years in 1938." This might lead people to think that before very long we may be approaching the end of our recruiting difficulties.

It is true that in 1920 and the following five years the birthrate was higher than in 1919, but from 1921 it fell steadily until 1926, when it was actually below the 1919 figure.

I agree that 18 is the popular age for enlistment and that theoretically the higher birthrate should, 18 years afterwards, produce an increased number of recruits; it probably will, but according to present experience, this increase, which incidentally only operates for five years on a gradually reducing scale, will not produce,

[1] "Recruiting and Unemployment," by Major B. T. Reynolds, M.C., R.A., JOURNAL of November, 1936, p. 739.

even on the most optimistic basis, the number of recruits the Army will require in those years. The increased production will hardly be sufficient to balance the normal wastage that will occur, with the result that the accumulated deficit which will exist in 1938 will continue to increase.

OBSERVER.

24th November, 1936.

AIRCRAFT VERSUS WARSHIPS

TO THE EDITOR OF THE R.U.S.I. JOURNAL.

SIR,—In my article "Aircraft *versus* Warships," page 793 of the JOURNAL for November, 1936—nine lines from the bottom—the words "air arm" have been omitted after "fleet." This sentence should read "He [Lieutenant-Commander Young] ends with the contention that we should have more ships and an increased Fleet Air Arm rather than spend money on a number of bombers for naval purposes."

H. W. MIREHOUSE,
Major.

19th January, 1937.

NAVY NOTES

GREAT BRITAIN

HIS MAJESTY THE KING

On his Accession to the Throne, the King addressed a special message to the Navy—published at the beginning of this JOURNAL. The First Lord of the Admiralty sent the following reply to His Majesty :—

" Sir Samuel Hoare with his humble duty begs to tender the thanks of the Royal Navy and Royal Marines for your Majesty's gracious message and to offer to your Majesty an assurance of their steadfast loyalty and affection."

ADMIRAL OF THE FLEET.

It was announced in the *London Gazette* of 18th December, 1936, that in accordance with a submission from the Lords Commissioners of the Admiralty in that behalf, the King has been pleased to assume the rank of Admiral of the Fleet in His Majesty's Fleet. To date 11th December, 1936.

CORONATION REVIEW.

H.M the King has approved of a Review of the Fleet being held at Spithead on Thursday, 20th May, on the occasion of his Majesty's Coronation.

ROYAL VISIT TO THE FLEET.

One of the last public acts of King Edward VIII before his abdication was to visit ships of the Home Fleet and naval establishments on 12th and 13th November, 1936.

The King arrived at Portland by train in the early morning of 12th November, and drove to the Dockyard, where the First Lord—Sir Samuel Hoare, the First Sea Lord—Admiral of the Fleet Sir Ernle Chatfield, and the Commander-in-Chief, Home Fleet—Admiral Sir Roger Backhouse, received him. He proceeded to the Fleet which owing to the rough weather was not dressed overall, but flew masthead flags.

The ships visited were the " Nelson," " Orion," " Courageous," " Royal Oak " and " Cairo," and after luncheon in the " Nelson," the " Royal Sovereign," " Neptune," " Leander " and " Guardian." An inspection of the Anti-Submarine School followed.

The King gave a dinner party in the Royal yacht " Victoria and Albert " to the Flag Officers and Captains, and later went on board the " Courageous " to a Lower Deck concert.

On 13th November, the depot-ships " Lucia " and " Titania," the new submarine " Narwhal," the destroyers " Faulknor," " Fury," " Echo," " Escapade," " Campbell," " Basilisk " and " Beagle " were visited. The King landed at Weymouth.

KING EDWARD VIIITH'S ABDICATION AND DEPARTURE FROM ENGLAND.

Following his abdication on the afternoon of 11th December, the former King left Fort Belvedere by car for Portsmouth Dockyard, where he was received by

Admiral Sir William Fisher, Commander-in-Chief. He went on board the destroyer "Fury," Commander C. L. Howe, which left harbour just before 2 a.m. on 12th December for Boulogne. He remained on board until 8 p.m., when he landed to join the Basle express.

Flag Appointments.

Director of Dockyards.—Vice-Admiral C. P. Talbot, C.B., D.S.O., was appointed to the Admiralty on 11th December, prior to taking up the post of Director of Dockyards. On 1st May, 1937, he will succeed Admiral Sir Percy Addison, K.B.E., C.B., C.M.G. (retired), who has held this appointment since 1st March, 1928.

Rear-Admiral (Submarines).—Rear-Admiral R. H. T. Raikes, C.V.O., D.S.O., succeeded Vice-Admiral C. P. Talbot as Rear-Admiral (Submarines) on 10th December.

Second Cruiser Squadron.—Rear-Admiral T. F. P. Calvert, C.B., C.V.O., D.S.O., succeeded Vice-Admiral S. J. Meyrick, C.B., as Rear-Admiral Commanding Second Cruiser Squadron on 14th December.

Malta Dockyard.—Rear-Admiral W. T. R. Ford, C.B. succeeded Vice-Admiral Sir W. F. French, K.C.B., C.M.G., as Rear-Admiral in Charge, Malta, and Admiral Superintendent, Malta Dockyard, on 24th January.

Gibraltar Dockyard.—Rear-Admiral A. E. Evans, O.B.E., is to be Rear-Admiral in Charge and Admiral Superintendent, Gibraltar Dockyard, in succession to Vice-Admiral J. M. Pipon, C.B., C.M.G., M.V.O., O.B.E., to date 16th April, 1937.

Third Cruiser Squadron.—Rear-Admiral L. V. Wells, D.S.O., is to be Rear-Admiral Commanding Third Cruiser Squadron, in succession to Rear-Admiral G. H. D. Lyon, C.B., to date 26th March, 1937.

America and West Indies.—The King has approved the appointment of Vice-Admiral Sidney J. Meyrick, C.B., to be Commander-in-Chief, America and West Indies Station, in succession to Admiral the Hon. Sir Matthew R. Best, K.C.B., D.S.O., M.V.O., to date 15th April, 1937, and to assume command at Bermuda about 26th May, 1937.

Flag Promotions and Retirements.

Vice-Admiral Cecil P. Talbot, C.B., D.S.O., was placed on the retired list to date 11th December, 1936. In consequence the following promotions were made from the same date :—

Rear-Admiral James M. Pipon, C.B., C.M.G., M.V.O., O.B.E., to be Vice-Admiral, and Captain Geoffrey S. Arbuthnot, D.S.O., A.D.C., R.N., to be Rear-Admiral.

Vice-Admiral Pipon, not having hoisted his flag at sea, was placed on the retired list to date 12th December, but no promotions will be made to fill the vacancy until the termination of his appointment as Rear-Admiral in Charge and Admiral Superintendent, H.M. Dockyard, Gibraltar.

Memorials to Admirals Jellicoe and Madden.

The tomb of Admiral of the Fleet Lord Jellicoe in St. Paul's Cathedral was dedicated on 23rd November, 1936. In an address, the First Lord, Sir Samuel Hoare said that King George V and Lord Jellicoe were "the two Englishmen of our generation who best transmuted English traditions into a super-excellent metal. Each of them lived a simple life. Each kept the balance between outdoor sport and indoor work. Each had the highest sense of duty. Each, typical of many

Englishmen, underrated his own abilities. . . . It was this single-minded simplicity that made them both so greatly beloved and so deeply respected."

A memorial plaque to Admiral of the Fleet Sir Charles Madden was also dedicated at the service which was conducted by Canon Alexander and Archdeacon Sharpe. The First Sea Lord, Admiral of the Fleet Sir Ernle Chatfield, who unveiled the plaque, said that among the many high and distinguished posts Sir Charles Madden had held, that of Chief of Staff to Lord Jellicoe during the War would be specially remembered. Like his great chief, Sir Charles will be remembered, not only for his fine qualities as a naval leader and a seaman, but also because he enjoyed the fullest confidence of all who served under his command.

Retention of Cruisers.

The retention of five cruisers of the "C" class which were due to be scrapped under the London Naval Treaty, 1930, by 31st December, 1936, was announced to the House of Commons on 17th December.

Sir Samuel Hoare said that the Government had been exchanging views on this subject with the other parties to Part III of the (1930) London Naval Treaty, viz., the United States and Japan. The U.S. Government had intimated that if H.M. Government decided to have recourse to Article 21 of the London Naval Treaty to retain these vessels, on the ground that the requirements of our nation's security necessitated this action, no objection would be raised by them. No final answer had yet been received from the Japanese Government, but the Admiralty had reason to believe that their reply would also be favourable.

On 18th December, the United States Government announced its intention of retaining a total of 59,000 tons of destroyers in excess of treaty limits. The retention of 40,000 tons had been previously announced (see the JOURNAL for August, 1936, page 632). The additional 19,000 tons is to match cruiser tonnage which the British Government had intimated could not be scrapped. The U.S. Navy does not possess enough over-age cruiser tonnage to make up the figure to which it is entitled.

Material.

1937 PROGRAMME.—The First Lord announced on 16th December that he proposed shortly to invite firms to submit tenders for the construction of capital ships to be laid down in 1937. In view of the length of time needed for the preparation of tenders and their examination by the Admiralty when received, this preliminary action was necessary in order to avoid delay at a subsequent stage. No tender will be finally accepted before the relevant 1937 Estimates have received Parliamentary approval.

1936 PROGRAMME.—Of the seven cruisers in this programme the "Belfast" and "Edinburgh," of 9,000 tons, were ordered in August last (see November JOURNAL). Of the remaining five, of the 5,000-ton "Dido" class, three will be built by contract, and tenders for these have been invited. The other two will be built in H.M. Dockyards, and it is anticipated that construction will begin in March.

The keels of the battleships "King George V" and "Prince of Wales" were laid at Walker-on-Tyne and Birkenhead respectively on 1st January.

Contracts for the aircraft carriers of the 1936 programme were placed in January: the "Victorious" with Messrs. Vickers-Armstrongs, Ltd., Walker-on-Tyne (with machinery by the Wallsend Slipway and Engineering Company), and the "Illustrious" with Messrs. Vickers-Armstrongs, Ltd., Barrow-in-Furness.

The order for H.M.S. " Widgeon," coastal sloop, was placed with Messrs. Yarrow and Co., Ltd., Scotstoun, Glasgow.

Orders for the three " Unity " class submarines of the 1936 programme have been placed with Vickers-Armstrongs, Barrow-in-Furness. The four " Triton " class submarines have been ordered as follows : " Thetis " and " Trident," Cammell Laird and Co., Birkenhead ; " Triumph," Vickers-Armstrongs, Barrow-in-Furness ; and " Tribune," Scotts' Shipbuilding Company, Greenock. The minelaying submarine " Seal " will be built at Chatham Dockyard.

H.M.S. " Linnet," tender to the " Vernon," is being built by Ardrossan Dockyard, Ardrossan ; the machinery will be by Ferguson Bros., Port Glasgow.

1935 PROGRAMME.—Most of the destroyers of the " Intrepid " class of this programme are now afloat. The " Imogen " (Hawthorn, Leslie) was launched on 30th October, 1936 ; the " Isis " (Yarrow) on 12th November ; the " Icarus " (John Brown) on 25th November ; the " Imperial " (Hawthorn, Leslie) on 11th December ; the " Intrepid " (J. S. White) on 17th December ; leaving the " Ilex " to be launched on 28th January, the " Ivanhoe " on 11th February, and the " Impulsive " on 1st March.

Of the seven " Tribal " class destroyers (1935 supplementary programme), the last to be laid down were the " Ashanti " and " Bedouin," by Messrs. Denny and Bros., Dumbarton, on 23rd November and 15th December.

The three submarines of the 1935 programme, " Cachalot," " Sterlet " and " Triton," were laid down at Greenock, Chatham and Barrow respectively in May, July and August, 1936.

The minesweeping sloop " Sharpshooter " was launched at Devonport Dockyard on 10th December. The " Hazard " and " Gleaner " are due to be launched by Messrs. Wm. Gray, West Hartlepool, in February and March respectively.

The coastal sloops " Kittiwake " and " Sheldrake " were launched by Messrs. J. I. Thornycroft and Co. at Woolston on 30th November and 28th January respectively.

The convoy sloop " Bittern " is due to be launched by Messrs. J. S. White and Co., Cowes, in March.

Motor torpedo boat No. 5 was commissioned on 27th October, and No. 6 on 17th November, thus completing the group of these craft built by the British Power Boat Company, of Hythe, Southampton, under the 1935 programme. Six more are being built under the 1936 programme.

1934 PROGRAMME.—The four cruisers of this programme, " Glasgow," " Birmingham," " Sheffield " and " Aurora," are all afloat, and should be completed during 1937.

The aircraft carrier " Ark Royal," laid down by Cammell Laird and Co., Birkenhead, on 16th September, 1935, will be launched in 1937, and is due for completion in July, 1938.

The flotilla leader " Hardy " and eight destroyers of the " Hero " type have been completed, and some have already arrived in the Mediterranean for service with the 2nd Flotilla.

The submarine " Spearfish " arrived at Portsmouth on 12th December from the builders' yard at Birkenhead, after trials in Scottish waters. The " Sunfish " (Chatham Dockyard) and " Rorqual " (Vickers-Armstrongs, Barrow) are due for completion in 1937.

The netlayer " Protector " was completed on 30th December by Yarrow and Co., Scotstoun, and arrived at Devonport on 2nd January.

1933 PROGRAMME.—H.M.S. "Penelope," first of the three cruisers of this programme, commissioned at Belfast on 12th November for acceptance trials and service in the Third Cruiser Squadron in place of the "Durban." She completed to full crew at Portsmouth on 18th November, and a month later proceeded to Portland for trials. On 31st December, the "Penelope" left Portsmouth for the Mediterranean.

FLEET FUELLING SERVICE.—Six motor tankers at present under construction are being acquired by the Admiralty for the Fleet Fuelling Service, and will be named the "Abbeydale" and "Arndale" (Swan, Hunter and Wigham Richardson); "Aldersdale" (Cammell Laird and Co.); "Bishopdale" (Lithgow's, Ltd., Port Glasgow); and "Boardale" and "Broomdale" (Harland and Wolff).

Speaking at the launch of the "Abbeydale" at Wallsend on 28th December, Mr. W. J. Gick, C.B., C.B.E., Director of Stores, said that this ship was the first tanker specifically launched for the Admiralty, but they had a fleet of twenty-three vessels, of which six had been built by Swan, Hunters. It was a definite part of Admiralty policy to own a fleet of tankers.

CHANGE IN NOMENCLATURE OF SLOOPS.—A change in the nomenclature of vessels hitherto termed sloops has been decided upon by the Admiralty. Patrol sloops and convoy escorts will in future be known as "Escort Vessels." The present sloop minesweepers will be renamed "Minesweepers." The present coastal sloops will be known as "Patrol Vessels."

DESTROYERS SCRAPPED.—The destroyers "Thruster," "Torrid" and "Rowena," completed in 1916–17, were received into dockyard control at Chatham on 23rd October, 1936, for preparation for sale.

WAGES AND NEW CONSTRUCTION.—The First Lord stated recently that, of the cost of new construction, 85 per cent. would be distributed in wages: about half to the industrial areas and half to the shipbuilding centres.

PERSONNEL.

PROMOTION ZONES EXTENDED.—The zone for the promotions to Commander on 30th June, 1937, will be from 3 to 7½ years' seniority as Lieutenant-Commander, instead of from 3 to 7 years, as hitherto. The zone for the promotions on 31st December, 1937, and thereafter, will be from 3 to 8 years.

The zone for the promotions to Engineer Captain and Captain (E) on 30th June, 1937, and thereafter will be from 8 to 12 years' seniority as Engineer Commander or Commander (E), instead of from 8 to 11½ years as hitherto.

MERCANTILE CADET ENTRIES.—The number of Naval Cadets entered annually from the Mercantile Marine training establishments has been increased from 10 to 18. It is proposed to maintain it at this figure until further notice.

HOUSE SYSTEM AT DARTMOUTH.—In an address to the Preparatory Schoolmasters' Conference in London on 22nd December, the First Lord of the Admiralty announced that after Easter it was intended to try as an experiment the house system at the R.N. College, Dartmouth. For many years past the term system had existed. Cadets lived and worked with the boys of their terms, and passed through the College in step with their term contemporaries. It had been held that this system, whilst excellent in certain respects, had tended to narrow the Cadet's outlook. Under the new plan the house rather than the term would be the main centre of life, and it was hoped that the Cadets would have more of the responsibility that is the essence of a successful public school.

LOWER DECK PROMOTIONS.—The following figures of ratings in the executive

and engineering branches and men in the Royal Marines who have been promoted to commissioned rank as Sub-Lieutenant, Sub-Lieutenant (E) and Second Lieutenant, R.M., respectively, in the years mentioned were given in a reply in the House of Commons by the First Lord on 9th December, 1936 :—

	1931.	1932.	1933.	1934.	1935.	1936.
Executive	12	8	6	5	3	4
Engineering	4	4	4	4	3	4
Royal Marines	1	—	—	1	1	1

AWARDS AND PRIZES.—The Commander Egerton Memorial Prize for 1936 has been awarded to Lieutenant I. F. M. Newnham, R.N., H.M.S. " Drake."

The Newman Memorial Prize for the year 1935–36 has been awarded to Lieutenant (E) J. P. Sandbrook, R.N., H.M.S. " Courageous."

INCREASE OF PERSONNEL.—A number of decisions indicate the steps being taken to provide the increase of personnel necessary for the growing fleet.

Special service ratings may now transfer to continuous service as soon as they are rated able seamen, signalmen or telegraphists, instead of being required to complete two years' service.

The number of stoker petty officers selected for the course for Mechanician, beginning at Devonport on 4th January, was 36, or three times the number selected a year ago.

It has become necessary for a greater proportion of seamen to take up rates in the non-substantive branches. Selected ratings are to be put through a course at the earliest opportunity after being rated A.B.

The time spent as ordinary seaman is to be reduced from 1½ years to 15 months in normal cases, and in special cases to one year. This decision had effect from 17th September, 1936.

In future, special service ratings who are considered to be likely ultimately to be selected for commissioned rank may receive special training and advancement as laid down for continuous service ratings.

Recruiting for shipwrights has now been reopened. From 1929 to 1936 no shipwrights were entered, but there are now vacancies for competent men, aged 19 to 28, at each of the Home Ports.

NEED FOR RE-ENGAGEMENTS.—Their Lordships have emphasized the need for men in certain branches and ratings, especially the artificer branches, and have advised all ratings nearing completion of time for pension to study the terms of re-engagement. The terms offered are generous, the Board state, as men may draw the special engagement bonus (1s. a day) and their long-service pension in addition to their full service pay and allowances (including the increased rate of marriage allowance) on the 1925 scale.

These ratings are mainly required in order to maintain an adequate proportion of experienced men among the numerous newly-trained ratings and new entries who will form a large part of the total strength of the Fleet during the period of expansion. They are also required as instructors to deal with the abnormal numbers of new entries. Further, the shortage of skilled artificers makes it very desirable to retain the services of those who have already naval experience and training.

ABOLITION OF THE CUTLASS.—It has been decided that the cutlass is no longer to form part of the equipment of men landed for service. The orders for its employment at ceremonial parades and at funerals are, however, to continue unchanged. Cutlasses are to be allowed only to capital ships, aircraft carriers, cruisers, sloops and destroyers, 20 for ships with complement exceeding 500, 10 for ships with 500 or under.

Organization and Distribution.

Mediterranean Fleet.—The flag of the Vice-Admiral Commanding, Battle Cruiser Squadron, was transferred from the "Barham" to the "Hood" on 30th November, at Malta. On the same day the flag of the Rear-Admiral, 1st Battle Squadron, was transferred from the "Shropshire" to the "Barham."

The Captain (D), 2nd Destroyer Flotilla, transferred to H.M.S. "Hostile" during the period between the departure from the Mediterranean of the "Kempenfelt" and the arrival on the station of the new flotilla leader "Hardy." The "Kempenfelt" left Malta for home on 14th December.

H.M.S. "Valiant" has been taken in hand at Devonport for large repairs, including the provision of new machinery. H.M.S. "Malaya," on concluding large repairs, was commissioned for trials at Plymouth on 30th October.

The 5th Minesweeping Flotilla, composed of the new trawlers "Hawthorn," "Willow," "Magnolia," "Lilac," "Laurel," and "Holly," purchased in 1935 for local defence service and subsequently employed at Alexandria, left Malta for home on 13th November. They have been reduced to reserve.

Minesweeping Training.—The "Cypress," "Syringa" and "Sycamore," from the 5th Minesweeping Flotilla, Mediterranean, have replaced the "Garry," "Liffey" and "Dee" in the Minesweeping Training Flotilla, Portland. The "Sapphire," "Topaze" and "Tourmaline" have replaced the "James Ludford," "Blackwater" and "Kennet" in the 1st Anti-Submarine Flotilla.

Destroyers for China.—The "Thracian" and "Westcott" left Devonport on 9th November for the China Station. The "Westcott" will be employed on service with the 4th Submarine Flotilla, in succession to the "Bruce," which left for home in January.

Miscellaneous.

International Gathering at Singapore.—Over twenty ships of the United States and Dutch Navies visited Singapore in the middle of November. Twelve U.S. cruisers and destroyers from Manila, headed by the heavy cruiser "Augusta," flagship of Admiral Harry Yarnell, were present, and a squadron from the Netherlands East Indies, under Commodore Helfrich, in the cruiser "Sumatra," with her sister-ship the "Java," three destroyers, four submarines and a squadron of flying boats. The visiting officers inspected the naval base. British ships present were the cruiser "Danæ," the surveying ship "Herald," and the monitor and base-ship "Terror."

The visit coincided with that of Mr. Kenneth Lindsay, M.P., Civil Lord of the Admiralty, who was on his way to Australia.

Spanish Waters.—The Navy has continued to provide ships during the past quarter for the protection of British interests in Spain and to assist refugees and hostages. The battle-cruisers "Hood" and "Repulse" arrived at Gibraltar and Tangier respectively on 5th December, to replace the "Valiant" and "Sussex." The Third Destroyer Flotilla left Malta on 26th November for Spanish ports to relieve the First Destroyer Flotilla. It returned to Malta for Christmas, and the First Destroyer Flotilla replaced it in Spanish waters.

A destroyer division from the Home Fleet has also been maintained off the coast of Northern Spain.

A report received from the Captain (D), Fifth Destroyer Flotilla, on the return of some of his flotilla from Northern Spain, showed that between September and November the "Exmouth," "Esk" and "Escort" made thirty voyages between North Spanish ports and France carrying refugees and hostages, and steamed about 13,000 miles.

PALESTINE.—In connection with the disturbances in Palestine a very large number of vessels have been searched for arms—as many as 150 a week during the melon season. A normal destroyer and trawler patrol steamed 1,300 miles along the 140 miles of coast during a 48-hour patrol period.

The Navy has also supplied landing parties for the protection of property, fire-fighting parties, a trained reserve of engine drivers and firemen for the Palestine Railways, two armoured trains (one broad and one narrow gauge), pom-poms and searchlights and 3.7-in. howitzers.

TURKISH VISIT TO MALTA.—For the first time sine the War, a visit was paid by the Turkish Fleet to Malta from 20th to 26th November, 1936. The force included the " Yavouz Sultan Selim," formerly the German battle-cruiser " Goeben," the destroyers " Zafer," " Tinaztepe," " Adatepe " and " Kocatepe," the submarine depot-ship " Arkin," and five submarines.

FORMOSA INCIDENT.—In the early morning of 7th October, three British sailors of H.M.S. " Medway " were assaulted in a Japanese police station at Keelung, Formosa. A dispute occurred respecting the payment of a taxicab fare which there was good evidence to show had been paid. The three men were taken to the police station, where on protesting they were held down and struck repeatedly, one man having his jaw fractured. Lieutenant T. A. Pack-Beresford, of H.M.S. " Bruce," who arrived and requested the release of the men, was insulted, and his request refused. After further ill-treatment the men were released at 7 a.m.

In reply to a question in the House of Commons on 23rd November, Mr. Eden, the Foreign Secretary, after recapitulating the circumstances of the case, said that the incident was of such a nature that the Government instructed our Ambassador at Tokio to inform the Japanese Government that the visit of courtesy due to be paid by the British Naval Commander-in-Chief to Yokohama on 30th October could not take place unless instructions were issued for the punishment of the Japanese officials responsible in this matter, compensation given to the injured men, and steps taken to prevent a recurrence of the incident. " Pending the receipt of a satisfactory final reply from the Japanese Government," Mr. Eden added, " I am unable to regard the incident as closed."

NAVY WEEK, 1937.

The annual Navy Week at Portsmouth, Devonport and Chatham will be held from Saturday, 31st July, to Saturday, 7th August, both dates inclusive, but excepting Sunday, 1st August.

ROYAL MARINES

COLONEL-IN-CHIEF.—His Majesty the King has been pleased to assume the Colonelcy-in-Chief of the Royal Marines with effect from 11th December, 1936.

The late King George V was appointed Colonel-in-Chief, Royal Marines, in 1900, as Duke of York, in succession to his late uncle, Admiral of the Fleet H.R.H. the Duke of Edinburgh, who had held the post since 1882. In 1910, King George V retained the post on his accession to the Throne, and it has since been held by the Sovereign.

RETIREMENT AND PROMOTION.—Lieut.-General G. Mathew, C.B., was placed on the retired list at his own request to date 1st January, 1937. Major-General W. W. Godfrey, C.B., C.M.G., Adjutant-General of the Corps, has been promoted to Lieut.-General from the same date.

ROYAL NAVAL RESERVE

SIGNAL COURSE.—Approval has been given for R.N.R. Lieutenants and Lieutenant-Commanders who have performed a signal course to undergo a refresher course of 21 days at intervals of not less than four years. This will be the same as, and run concurrently with, the existing qualifying course. This refresher course will be regarded as voluntary training under R.N.R. Regulations.

DOMINION NAVIES

ROYAL AUSTRALIAN NAVY

SECOND NAVAL MEMBER.—Captain G. P. Thomson, O.B.E., R.N., has been appointed Second Naval Member, Australian Naval Board, in succession to Captain P. E. Phillips, D.S.O., R.N.

SOUTH AUSTRALIA CENTENARY.—The "Canberra," "Stuart," "Vendetta" and "Waterhen" visited Adelaide during the last fortnight of December for the celebration of the centenary of South Australia. The "Danae," from the China Station, was also present, and afterwards visited Melbourne, Sydney, Brisbane and Port Darwin.

ROYAL CANADIAN NAVY

DESTROYER RELIEFS.—The "Crescent" and "Cygnet," completed in 1932, have been bought by the Canadian Government to replace the "Champlain" and "Vancouver," whose names they will take. They were due to be taken over by Canadian crews in February.

NEW ZEALAND DIVISION, ROYAL NAVY

NEW FLAGSHIP.—The broad pendant of the Commodore Commanding New Zealand Station was transferred from the "Dunedin" to the "Achilles" on 5th January.

H.M.S. "Leander," from the Second Cruiser Squadron, Home Fleet, on completing Christmas leave, passed under the administration of the Commander-in-Chief, Plymouth, from noon on 14th January. It was arranged in 1933 with the New Zealand Government that two "Leander" class cruisers should join that station when available.

FOREIGN NAVIES

CHINA

After work had been suspended for some two years, the small cruiser "Ping Hai," laid down in 1931, is now complete. She has a displacement of 2,500 tons, carries six 5.5 in. and six 3.4 in. guns, four 21 in. torpedo tubes, and two aircraft. Her designed speed is 24 knots.

DENMARK

Before being broken up, the old coast-defence ironclad "Olfert Fischer" was used for bombing experiments. In these some 300 light bombs were dropped, but only 10 struck the ship. Both dive bombing and level flying at between 4,000 and 6,000 ft. were employed. The aeroplane crews, however, were not experienced in the attack of ship targets.

FRANCE

NEW PROGRAMME.—Last December the Minister of Marine outlined a new programme of construction to be completed in 1943. It makes provision for five 35,000-ton battleships and ten 10,000-ton cruisers, together with the requisite personnel, stocks, fuel and ammunition.

NEW CONSTRUCTION.—The battleship " Strasbourg " was launched in December, and on the 1st January the 35,000-ton " Jean Bart " was laid down on the slip at St. Nazaire which the former had vacated. A sister ship, the " Richelieu," is building at Brest. It is anticipated that they will take about four years to build. It appears to be the intention not to lay down a third ship at present but to concentrate on the construction in hand.

The " Dunkerque," having completed her trials, has joined the *Escadre de l'Atlantique*.

A new aircraft carrier is projected, but construction is indefinitely postponed. An 8,000-ton cruiser, four seaplane tenders, two 1,850-ton destroyers, and four submarines of the " Aurore " class are provided for in the 1937 programme.

The 3,000-ton " Volta," classified as a flotilla leader, is expected to be ready for trials in May, and her sister ship, the " Mogador " in October. These vessels are of 360 tons greater displacement than the earlier class. They will carry eight 5.5 in. and four 1.5 A.A. guns, and nine 21-in. torpedo tubes. Their engines are designed to develop over 100,000 h.p., and their speed is expected to exceed the record of 42.253 knots held by " Le Terrible."

OLD BATTLESHIPS.—The name of the " Jean Bart," belonging to the Instructional Division, has been changed to " Ocean."

FLAG APPOINTMENTS.—Vice-Admiral Darlan has succeeded Vice-Admiral Durand Viel as Chief of the Naval General Staff. Vice-Admiral Darlan is fifty-six, and said to be the youngest Flag Officer in the French navy. He has been closely concerned with the rebuilding of the fleet during the last ten years.

GERMANY

NEW CONSTRUCTION.—A 35,000-ton battleship was laid down at Kiel last year. A second ship of the same class is projected for 1937.

The first 26,000 ton battleship, " Scharnhorst," was laid down at Wilhelmshaven on 3rd October, and the " Gneisenau " at Kiel on 8th December, 1936. These ships will have an armament of nine 11 in., twelve 5.9 in., and six 4.1 in. A.A. guns. An aircraft carrier of 19,250 tons is building, and a second vessel is projected in 1937. These will be the first carriers ever built for the German Navy. No details are as yet available.

A new class of six ocean-going destroyers of 1,811 tons were laid down last year. Also twelve 600-ton torpedo boats.

SUBMARINES.—Germany has, built or building, forty submarines: " U.1 " to " U.24 " are craft of 250 tons; " U.25 " and " U.26 " are 712 tons; and the remainder are of 500 tons. The smallest type carry three, and all the others six 21 in. tubes.

FLAG APPOINTMENT.—Vice-Admiral Rolf Carls succeeded Admiral Richard Föerster as Commander-in-Chief of the German Fleet afloat on 1st January.

ITALY

ESTIMATES.—The Naval Budget for 1936–37 amounts to 1,609,891,000 lire, an increase of 305,010,000 lire on the previous year.

PERSONNEL.—An increase to the extent of 7,000 in naval personnel has also been approved, but it is understood that this only provides for ships which were under construction in 1936 and not for any further expansion of the fleet.

WORKING HOURS.—It is interesting to note that whereas the French Government has reduced the working hours to 40 per week, the Commissariat-General for War Manufacturers in Italy has authorized certain factories employed on armaments to extend their working hours to a maximum of 60 per week.

JAPAN

NAVAL PROGRAMME.—The Japanese Diet has been supplied with details of a naval programme which will involve the expenditure of £65,000,000 over and above the normal provision of the Naval Budget during the next five years. One-sixth of this is included in the Estimates for 1937–38 which amount to £38,000,000. The principal allocations in this five-year programme are :—

£47,000,000 for new construction.
£8,000,000 for new guns and other equipment.
£4,800,000 for " additional land and water equipment."
£4,200,000 towards the development of the Naval Air Force.

RETENTION OF TONNAGE.—Great Britain, having invoked the " Escalator " Clause of the 1930 London Treaty in order to enable her to retain a certain tonnage which otherwise would have been scrapped, Japan, having only a balance of 11,059 tons of destroyers, is also retaining 15,598 tons of submarines.

NAVAL BASES.—There are strong indications that naval and air bases are being or will be developed in Formosa and in the mandated islands in the South Pacific. Two development companies have been formed with official backing to promote emigration into those territories. Admiral Siezo Kobayashi, a high War Councillor, has been appointed Governor of Formosa. Admiral Osumi Nagana made a tour of the mandated islands last year and has reported favourably on them from an economic and emigration point of view.

MEXICO

Four transport gunboats have been built in Spanish ports and delivered to the Mexican navy. These are vessels of a novel type, displacing 1,300 to 1,500 tons, and having accommodation for 30 to 40 officers, 200 to 450 men, and 20 to 80 horses. They have a speed of about 20 knots. A fifth ship is building at Cadiz.

NETHERLANDS

NEW CONSTRUCTION.—The 1937 programme makes provision for a gunnery training ship of 2,100 tons with four 4.7 in., and eight smaller A.A. guns; two destroyers; two " K " class submarines; and a cadet ship of 1,300 tons.

The submarine " O.16 " was commissioned in the latter part of last year; with a displacement of 950 tons and an armament of eight 21 in. tubes, one 3.5 in. gun, and two 40 mm. machine guns, she is the largest underwater craft in the Dutch navy. Her surface speed is 18, and submerged speed 9 knots.

EAST INDIES SQUADRON.—It is the intention of the Netherlands Government to increase materially the naval forces in the East Indies. This, it is stated, has become necessary in view of the existing international situation.

SWEDEN

REORGANIZATION.—The control and administration of the Swedish Defence Forces have been reorganized, and the Army, Navy, and Air Force have been placed under separate Chiefs. Vice-Admiral C. L. de Champs has been appointed Chief of the Navy until the end of June, 1937. Besides being responsible for the training, organization, equipment, personnel, and operations of the fleet, his responsibilities extend to the coast artillery and fortifications of the six Naval Districts.

NEW CONSTRUCTION.—A programme to be spread over ten years includes two destroyers of the " Göteborg " type, a small destroyer and six submarines. The two first and three of the latter are building. The " Sverige " class of coast defence battleships are to be modernized. The total cost of the programme will be 53,000,000 kronen.

The " Göteborg " herself was completed at the end of last November. On her trials she attained a maximum speed of 40.02 knots. While running at that speed her engines were reversed and she was brought to a standstill in three-quarters of a minute and in one and a half ship's lengths. On a six-hours run she maintained 39.6 knots.

UNITED STATES

ESTIMATES.—The Naval Appropriations Bill for 1936–37 amounts to the record peace-time figure of $531,568,700. It makes provision for continuing the construction of 84 ships and laying down 12 destroyers and 6 submarines. The Bill has also authorized the President to lay down two new battleships.

The enlisted strength of the navy is to be increased by 6,500 to 100,000, and of the Marine Corps by 1,000 to 17,000 by the end of the Financial year.

NEW BATTLESHIPS.—It is officially announced that two 35,000-ton battleships will be laid down on 1st June next. Their construction is expected to take four years. It is understood that the main armament will be either three triple 16 in. or three quadruple 14 in., depending on the calibre of gun adopted in the new Japanese ships. Their speed will be low compared with their contemporaries of other nations, and is not designed to be more than 26 or 27 knots. Mr. Swanson, Secretary of the Navy, in divulging this, explained that it would allow of the ships being provided with heavy armour and guns. They were building battleships, not armoured cruisers, he said.

CRUISERS.—The 10,000-ton, 8-in. gun cruiser " Vincennes " is due for completion during 1937, and the " Wichita," the last of that type, in 1938. The first two 10,000-ton, fifteen 6-in. gun ships are due to complete in 1937; five more in 1938, and the remaining two in 1939. This amends the table given in last quarter's notes.

FLAG APPOINTMENTS.—Admiral W. H. Leahy was appointed on 1st January to relieve Admiral W. H. Standley as Chief of Naval Operations. Previously he was in command of the Battle Force, where he has been relieved by Admiral Bloch.

Admiral Standley was not normally due for relief until 1st July next, but received permission to retire on the earlier date at the age of 64 after 45 years service.

NAVAL AIR SERVICE.—Under the 1936–37 Appropriation Bill, the first line strength of the Naval Air Service is to be brought up to 1,259 aircraft by 30th June, 1937.

The Marine Corps is being provided with a new aviation base in St. Thomas Island—Virgin Group. Eventually the force to be stationed there will consist of two squadrons of thirty-six aeroplanes. This base is regarded as being of strategic importance in connection with the defence of the Panama Canal.

ARMY NOTES

HIS MAJESTY THE KING

The message from His Majesty to the Army will be found at the beginning of the JOURNAL. The following reply was sent by the Secretary of State for War :—

THE WAR OFFICE,
15th December, 1936.

"Mr. Duff Cooper, with his humble duty, begs to submit the thanks of the Army for Your Majesty's gracious message which affords great encouragement to all ranks in the discharge of their duties."

DUFF COOPER.

FIELD-MARSHAL.

The King has been pleased to assume the rank of Field Marshal ; with effect from 11th December, 1936.

The King has been pleased to assume the Colonelcy-in-Chief of the following Regiments and Corps : The Life Guards, Royal Horse Guards, Royal Regiment of Artillery, Corps of Royal Engineers, Grenadier Guards, Coldstream Guards, Scots Guards, Irish Guards, Welsh Guards.

His Majesty has been pleased to assume the appointment of Captain-General of the Honourable Artillery Company, Territorial Army.

H.R.H. THE DUKE OF GLOUCESTER.

Major H.R.H. the Duke of Gloucester, K.G., K.T., K.P., G.C.M.G., G.C.V.O., 10th Royal Hussars, to be Major-General (supernumerary).

HOME

APPOINTMENTS.

The following appointments are announced :—

Major-General Lord Dawson of Penn, P.C., G.C.V.O., K.C.B., K.C.M.G., LL.D., M.D., F.R.C.P., to be Chairman of the Army Medical Advisory Board.

Colonel (tempy. Brigadier) A. G. Paterson, D.S.O., M.C., to be Commander, the 1st Tank Brigade ; from 1st March, 1937.

Major-General A. F. Hartley, C.B., D.S.O., I.A., to command the Waziristan District in October, 1937, in place of Major-General D. E. Robertson, C.B., D.S.O., .A., appointed D.A. and Q.M.G., Northern Command, India, from that date.

Major-General G. C. Williams, C.B., C.M.G., D.S.O., to be Commander of the 5th Division ; from about May, 1937.

Major-General D. J. C. K. Bernard, C.B., C.M.G., D.S.O., to be Commander, the 3rd Division from 1st December, 1936, and to be succeeded as Director of Recruiting and Organization at the War Office by Major-General M. G. H. Barker, D.S.O., Colonel, The York and Lancaster Regiment.

The following General Officers have been appointed Colonels Commandant for their respective Corps for the year 1937 :—

Royal Artillery.—General Sir Thomas A. Cubitt, K.C.B., C.M.G., D.S.O.

Royal Engineers.—Lieutenant-General Sir Ronald E. Charles, K.C.B., C.M.G., D.S.O.

Royal Corps of Signals.—Colonel (Honorary Brigadier-General) H. C. Smith, D.S.O.

Royal Tank Corps.—Colonel (Honorary Major-General) Sir Ernest D. Swinton, K.B.E., C.B., D.S.O.

Royal Army Service Corps.—Major-General Sir Reginald Ford, K.C.M.G., C.B., D.S.O.

Royal Army Ordnance Corps.—Major-General C. D. R. Watts, C.B., C.M.G.

Promotions.

Colonel C. N. F. Broad, D.S.O., to be Major-General; from 25th November, 1936.

General Broad joined the R.A. in 1905 and was promoted Captain in 1914. During the War, he served with the Royal Tank Corps and on the General Staff. He has been employed as Tank Gunnery Instructor and as Chief Instructor at the Royal Tank Corps School. His last appointment was in India, where he commanded the 4th (Quetta) Infantry Brigade.

Colonel D. K. McLeod, D.S.O., I.A., to be Major-General; from 26th October, 1936.

Colonel Mcleod is an Indian Cavalry Officer and served with the 12th Bengal Cavalry. He saw active service in 1908 against the Zakha Khel and was in France from 1914 to 1917. He has been on the General Staff at the War Office and at the Staff College, Camberley. His last appointment was in command of the 1st (Risalpur) Cavalry Brigade, India.

General.

Education of Officers.—There seems to be a certain amount of misunderstanding and lack of knowledge of the system of educating officers in foreign armies as compared with our own. It is sometimes thought that ours is the only army in which officers of the various arms receive their initial military training in different colleges, or that our officers are course-ridden while those of other armies enjoy comparative freedom from that bugbear. Neither of these criticisms, however, will stand close examination, as will be seen by the following brief summary of the systems in vogue in the Armies of France, Germany and Italy :—

France.—The *Ecole Spéciale Militaire de St. Cyr*, which corresponds to the R.M.C., Sandhurst, trains cadets for the Infantry, Cavalry, and Tank Corps.

In addition, there exists the *Ecole Polytechnique*, which is a scientific school in Paris, organized on a military basis for the training of cadets for military or civil employment in which advanced mathematical and scientific knowledge is necessary. The School corresponds in a measure to the R.M.A., Woolwich, with the difference that it is not designed exclusively for the training of cadets for the Army though it is under the jurisdiction of the Ministry of War. A large proportion of artillery and engineer regular officers receive their initial training in this institution. After completing the course, candidates for permanent commissions go as officers to the particular school of their arm of the Service (see para. 4 below).

There are also schools of instruction for N.C.O candidates for commissioned rank. These are as follows: Infantry and Tanks, *Ecole Militaire d'Infanterie et des Chars*, at St. Maixent. Artillery: *Ecole Militaire d'Artillerie*, at Poitiers; *Ecole d'application d'Artillerie*, at Fontainebleau. Cavalry and Train: *Ecole militaire de Cavalerie et du Train*, at Saumur. Engineers: *Ecole militaire du Génie*, at Versailles.

The above schools are all designed for the training of cadets and those aspiring to commissions. An important part, however, of the French Officers' early training consists of a course at what is called an *Ecole d'Application* to which officers are sent immediately on receiving their commissions and before being posted to a Regiment. This does not, however, apply to infantry officers, who are posted to units immediately on receiving their commissions.

The different schools for the various arms and services include:—

Arm.	*Location.*	*Duration of Course.*
Tanks	Versailles	Ten months
Cavalry and Train	Saumur	Ten months
Artillery	Fontainebleau	Two years
Engineers	Versailles	Two years
Aviation	St. Avord	Five months
Intendance	Paris	Two years
Medical	Paris	Nine months
COLONIAL:—		
Medical	Marseilles	Nine months
Veterinary	Saumur	Nine months
Gendarmerie	Versailles	Six months

Germany.—A candidate for a commission in the combatant ranks of the Army has first to pass through the ranks. At the end of a period in the ranks, he goes to a *Kriegs-Schule* (Military Academy) with the rank of Junior Ensign. The *Kriegs-Schule* trains candidates for all arms of the Service. Later, as an Ensign, he attends a course at the School of his own arm (Infantry School, Cavalry School, etc.).

Italy.—Candidates for permanent commissions in the Army usually first enter the Military Schools at Rome, Naples and Milan. The object of these schools is to train boys between the ages of thirteen and seventeen who are physically fit and possess certain educational qualifications for commissions in the Regular Army; though in theory all cadets need not subsequently become Regular Officers. They then go on to the Military Academies at Modena for infantry, cavalry, carabinieri, and administrative services and at Turin for artillery and engineers.

ARMY JUMPING TEAM.—The Army team won the International Military Challenge Trophy for jumping over the course, held in New York. The following competed: Captain Sir Peter Grant Lawson, Royal Horse Guards; Major A. L. Cameron, D.S.O., M.C., Royal Horse Artillery; Captain R. G. Fanshawe, 16th/5th Lancers; Lieutenant J. A. Talbot-Ponsonby, 7th Queen's Own Hussars. The last-named officer is the British Army Champion of 1936, and in New York won the International Championship open to all Armies of the world.

This satisfactory result affords great credit to the officers concerned and to the Commandant and Instructors of the Equitation School, Weedon.

A ROYAL MASCOT.—The King has presented the 1st Battalion, The Welch Regiment, stationed at Belfast, with an additional goat from the Royal herd at Windsor Great Park. This herd, from which the regimental mascots have been

bred, was established from goats given to Queen Victoria by the Shah of Persia, and Her Majesty inaugurated the practice of presenting the goats to the Welch Regiments.

The present mascot goat of the 1st Battalion is " Taffy VI," and is four years old. The 2nd Battalion, at present in India, have secured a fine wild ram from the Indian hills. The new goat presented by His Majesty will undergo training with the Regimental Depot at Cardiff.

A Scientist on War.—Professor J. B. S. Haldane, F.R.S., read a paper at the annual meeting of the British Association for 1936 on the subject of modern war. Science, he declared, had been unjustly accused of having made war more terrible. This, however, was not his opinion and he pointed out that without high explosives modern mining technique would be impossible. Towns had certainly been destroyed by high explosives during the Great War, but in earlier times the practice had been to burn down cities by fire. War could not, he said, be waged without damage to property and heavy loss of life. Millions of men were killed by explosives, while others were destroyed by starvation, but wars had always been decided by killing men.

Modern armies owed their size to modern methods of transportation and sanitation, without which such large forces could neither be moved about nor kept free from epidemic diseases. Supposing that it were possible to banish high explosives from war, armies, owing to fewer men being needed in industry, would be larger than ever. History does not show that troops, equipped with the latest scientific inventions, inflict any more casualties on each other than forces armed with primitive weapons. On the whole the evidence appears to be to the contrary. Primitive weapons, involving hand-to-hand fighting, formerly caused very heavy losses to both sides.

Gas, according to the Professor, is a relatively humane method of war, causing only 1 per cent. of deaths amongst the casualties which it inflicts. Science has made war more expensive and also more dangerous to non-combatants. These are two good reasons for supposing that the most careful consideration will be given to all aspects of the situation, before any Power starts a fresh war. A new struggle, on the lines of the Great War, would certainly mean the end of our present civilization, but this, in the opinion of the Professor, would not be an unmixed evil. The survivors would be able to reorganize the world on a different basis and would take steps to eliminate the causes of war.

Professor Haldane is still a comparatively young man, only forty-four years of age. He was educated at Eton and New College, Oxford, where he took the M.A. degree. On the outbreak of the Great War, he joined the Army, and served with Black Watch in France and Iraq from 1914 to 1919, and was twice wounded. He was promoted Captain in 1915. After the War, he was appointed Fellow of New College and Fullerian Professor of Physiology, the Royal Institution, 1930–32. He is the author of numerous scientific papers on human chemical physiology, genetics, and other subjects, and was President of the Genetical Society in 1932. His latest book, *Fact and Faith*, was published in 1934, and he has held the appointment of Professor of Genetics, University College, London, since 1933.

Modern Combat Vehicles.—Two newly designed combat vehicles have recently been developed by Straussler Mechanization, Ltd., of London. This firm was organized in 1934 round a nucleus of a great deal of practical experience in the field of military mechanization. Major-General S. C. Peck, formerly Director of Mechanization at the War Office and Mr. T. O. M. Sopwith, the noted aeroplane

manufacturer are included in the Board of Directors. The Technical Director is Mr. Nicholas Straussler, who is well known as a designer of armoured vehicles and auxiliary equipment and was formerly affiliated to Vickers-Armstrongs.

Armoured Car II, produced by Messrs. Straussler, was developed with military requirements in mind, and is not built round a commercial chassis. The hull is mounted on the frame which is sprung to the axles by means of duplex transverse springs. Articulation of the front axle is so complete that one wheel actually can be raised some 2 feet 6 inches without the other wheel leaving the ground, while the hull remains practically horizontal. The independent wheel springing gives a high degree of comfort in driving even over rough ground and makes for an exceptionally stable gun platform.

Other details are: *crew*, 5 men; *armament*, two M.G.'s with 360° traverse; *armour*, 6 mm. rolled plates united by welding and riveting; *maximum road speed*, forward 60 m.p.h., reverse 50 m.p.h.; *petrol consumption*, 10 miles per gallon; *circuit of action*, 400 miles; *cross country performance*, high; *weight* (loaded), 4 tons; *engine*, 4 cyl. 100 h.p.; *transmission*, two six-speed—drive is to all 4 wheels; *length*, 12 ft.; *width*, 7 ft. 3 in.; *wheelbase*, 9 ft. 10 in.; *clearance* (minimum), 1 ft. 2 in.

The light tank produced by this firm has an entirely new principle of suspension. Each track assembly is attached as a unit at one point at the centre of the vehicle, one assembly on each side. Each separate assembly includes two large outside wheels and two smaller inside wheels or track rollers, which are 'idlers.' Excellent results have been obtained with this suspension and broken ground can be traversed with practically no movement of the hull, thus providing the stable gun platform so desirable and so difficult to obtain (*Army Ordnance*, U.S.A., May-June, 1936).

Employment Bureau for Retired Officers of the Regular Army.—A brief account of the activities of this Bureau up to the end of March, 1936, was published in Army Notes for May, 1936. Statistics for the year 1936 show that 113 retired officers have been directly placed in employment, of whom 41 were Indian Service. Another 100 officers found jobs on their own often assisted by the Bureau. The total number of officers registered during the year was no less than 453, of whom 134 were Indian Service. Since its inception in December, 1934, 1,573 officers (449 of Indian Service) have registered and 400 (98 of Indian Service) have found employment. The advisory function of the Bureau is being increasingly appreciated as the great majority of officers leave the Service without any definite qualifications for civil life or knowledge of what they are up against. Thus, officers who know that they will be leaving the Service within a few years should seriously consider the type of employment they are fitted for and proceed to qualify themselves while still in the Service. When they happen to be in London they can get the benefit of advice based on the experience of the Staff. If any of our readers hear of a job suitable for an ex-officer will they please help by communicating with the Secretary, at Lion House, Red Lion Street, Holborn, W.C.1.

TERRITORIAL ARMY

Recruiting.—A large increase in the number of men joining the Territorial Army is recorded. The latest returns show that during December the number of recruits finally approved was 2,846—an increase of 128 per cent. over December, 1935.

In spite of this, the deficiency is 2,079 Officers and 52,843 Other Ranks. This

increased shortage is due to the increased establishment of the new Anti-Aircraft Divisions, which are twice as large as the Divisions they replaced. The strongest Division is the 51st (Highland) with 9,076 of all ranks.

RECRUITING FOR THE 1ST ANTI-AIRCRAFT DIVISION.—In view of the great importance of the early completion to full strength of the 1st Anti-Aircraft Division, and the consequent effect on recruiting for other units in the same area, a Joint Committee has been established to co-ordinate the recruiting and publicity of the Territorial Army and Air Force Associations of the City and the County of London, and of the counties of Middlesex, Essex, Kent, Surrey and Hertford.

Lieutenant-Colonel J. K. Dunlop, T.D., has been appointed Secretary to this Committee ; his address will be Duke of York's Headquarters, Chelsea, S.W.3.

Kingston-on-Thames has rallied to the support of the Division and Bentalls Ltd. have offered to provide a complete company for the 30th (Surrey) Anti-Aircraft Battalion, R.E. Mr. Gerald Bentall, who has taken the lead, will receive a commission and over 200 men of the staff have volunteered to serve. Members attending camp will get a week's pay in addition to their usual holiday pay.

ARTILLERY.—The Director-General of the Territorial Army, General Sir Walter Kirke stated lately that the Field and Medium Artillery was up to 94 per cent. of its establishment of over 24,000. The figures for London, which has sometimes been reproached for its lack of support for the T.A., were, he said, even better for only seventeen more Gunners were required to complete.

No better life, he declared, offered itself for a young man of spirit and enterprise and he strongly advised the youth of the country to join the Army and lead a happy, open-air existence with the prospect of employment afterwards. The firm resolve of the Government was, he affirmed, that the ex-soldier should be better looked after in the past than he had been in the future.

CITY OF LONDON SIGNALS.—The Chief of the Imperial General Staff, Field Marshal Sir Cyril Deverell, visited the H.Q. of the City of London Signals and distributed the prixes won during the year. Signals, he declared, were one of the most distinguished units in the Army and there was no branch of the Service in which higher efficiency was required.

2ND ANTI-AIRCRAFT DIVISION.—This formation will consist of Divisional H.Q. and four anti-aircraft groups, which will be formed by the conversion into anti aircraft units of certain units of the R.A., R.E., and Territorial Army infantry and its role will be to provide the anti-aircraft defence for the Midlands and the North of England.

Divisional H.Q. have been located temporarily at York, and the H.Q. of the four groups have been fixed at Durham, Retford, Derby and Chester. An anti-aircraft group normally includes two or three A.-A. Brigades, R.A., and two A.-A. Battalions, R.E.

SUMMER CAMP ATTENDANCE.—The *Daily Telegraph* Challenge Cup, awarded annually for the best attendance at camp, has been won this year by the 10th Battalion, The Manchester Regiment. This Battalion has now won the Cup for three years in succession, and this is the sixth successive year that it has been won by an Infantry unit.

The Secretary of State for War, Mr. Duff Cooper, sent a special message to congratulate the battalion on its unique feat. No unit had ever equalled this record of three successive wins, he declared, and the regiment actually exceeded its establishment in camp on each occasion.

OFFICERS TRAINING CORPS

CERTIFICATES "A" AND "B."—The report on the examination for cadets of the Senior and Junior Divisions shows improvement on previous years. For Certificate "A" the infantry papers showed that candidates, generally speaking, had not been given sufficient instruction in the practical side of their work. The standard of military knowledge was, on the whole, satisfactory, but the ability to impart it to others was below average.

The standard of weapon training was satisfactory. Map reading and compass work were good, and in tactical training, candidates showed careful instruction.

SIGNAL UNITS.—Signal units at Glasgow, Manchester, Belfast and Bristol, which only started recruitment on 1st October, 1936, have already enlisted over 50 per cent. of their strength, and at Belfast, a new Signal lecture hall has been erected. At Cambridge, the signal unit, with its volunteer research section, is over establishment.

INDIA

NORTH WEST FRONTIER. ACTION OF BISHE KASHKAI, 25th–27th November, 1936.

The following is a brief outline of the severe fighting which took place during the latter part of last year between the Government forces and the Tori Khel Wazirs. A section of this tribe had harboured a notorious firebrand, the Faqir of Ipi, who had been conducting a religious agitation against the Government over the alleged conversion of a Hindu girl to Islam. Haji Mirza Ali Khan, Faqir of Ipi, is thirty-five years of age and is the son of Mullah Arsala Khan, a Haibati Tori Khel Wazir. He wields great influence on the Frontier on account of the religious purity of his life and because he seldom, if ever, accepts cash tributes. His home is at Ipi, just North of the Tochi river, a few miles South of Mir Ali, and he was formerly a pupil of the famous Mullah Alam Khan.

The Political authorities, wearying of the Faqirs unceasing intrigues, entered into negotiations with the Tori Khel Maliks with the object of persuading the leaders to expel Haji Mirza or to put a stop to his anti-Government activities. The tribal chiefs, however, declared their inability to take action against the Faqir without Government support, which was then promised.

Two columns marched in accordance with this decision on 25th November, from Damdil and Mirali respectively, with the intention of making a demonstration in the Khaisora Valley and effecting a junction at the village of Bishe Kaskhai. Although serious opposition was not expected, the experienced commanders on the spot took all military precautions for their local protection, and were in no way tactically surprised by the unlooked for strength of the enemy.

The terrain over which the troops had to operate was very rough and broken, and the route to be followed ran along a narrow valley dominated by scrub-covered hills containing many deep caves and hideouts. The Damdil column, which was the stronger of the two, included an infantry brigade and a brigade of mountain artillery, with detachments of R.E., Royal Signals and Medical units. Shortly after leaving its base, this force was stubbornly opposed by considerable numbers of tribesmen, who were mostly Tori Khel Wazirs.

Progress was slow, but our infantry, fighting with skill and determination and closely supported by mountain artillery and machines of the R.A.F., gradually overcame the enemy resistance and reached Bishe Kashkai before dark. The Mirali column was not so successful. This force, which appears to have consisted

of two infantry battalions and does not seem to have included any artillery, advanced for about seven miles without undue difficulty.

But, strong enemy reinforcements came into action at this point, and fierce fighting took place. The Government forces, lacking the necessary strength to advance further, were held up and passed the night under the fire of the tribesmen.

At dawn on 26th November, a detachment from the Damdil column, which had become aware of the check to the troops from Mirali, moved out in support, and, after some opposition, effected a junction with the latter and enabled them to march into Bishe Kashkai, where the combined forces spent the night in an entrenched camp.

The commander of the combined columns decided not to remain at Bishe Kashkai and ordered the troops to move to Mirali. The advance was resumed at first light on 27th November. Encumbered by large numbers of wounded, who, owing to the rough ground, had to be carried on stretchers by hand or conveyed on camels and ponies, the brigade fought its way forward. Strong bodies of the enemy, elated by the sight of the regular troops leaving their territory, attacked our flank and rear guards with dash and determination and bitter fighting took place. However, the morale of our infantry was equal to all demands and the troops with their wounded reached Mirali unshaken. Here a motor road to Bannu enabled ambulances of the Royal Indian Army Service Corps, escorted by armoured cars of the Royal Tank Corps, to effect a rapid and comfortable evacuation of casualties to the base hospitals.

The losses were unfortunately heavy: Majors J. W. B. Tindall, 3rd Battalion, 7th Rajputs and J. B. P. Seccombe, 6th Royal Battalion, Frontier Force Rifles, killed; Captains F. L. Boyd and R. R. Phillips, 7th Rajputs; Captain J. R. H. Peacock, Frontier Force Rifles; and Lieutenant W. J. Fletcher, 3rd Light Battery, R.A., wounded.

1st Northamptonshire Regiment.—British Other Ranks, killed one; wounded, eleven.

Royal Corps of Signals.—British Other Ranks—wounded, two; *Indian Army Other Ranks*—killed, nineteen; wounded, approximately ninety.

The casualties amongst the Indian Ranks were incurred chiefly by the 7th Rajputs, the Frontier Force Rifles, and the Tochi Scouts.

The enemy's casualties were severe but are not known with accuracy as they carry away their dead and conceal the numbers of their wounded. The facts, however, will gradually emerge through tribal sources, and there is good reason to suppose that their losses were fully as great as our own. The lack of organized opposition to our troops in the second—or road-making phase—is significant.

The news of these events soon reached Command H.Q. at Rawal Pindi, some two hundred miles to the North. The G.O.C.-in-Chief decided to take personal control himself and immediately set in motion troops from various garrisons towards the disturbed area with the object of providing a striking force of two mixed brigades (infantry brigades containing a proportion of artillery, R.E., and ancillary troops) with a third, in support, on the lines of communication.

These forces are at work on the construction of a road, in tribal territory, which will run South from Mir Ali, across the Tochi river to Biche Kashkai and then turn West to link up with the existing road at Asad Khel. Little organized opposition has been encountered, but snipers have been active round our camps, particularly

at night, and in a brisk encounter between the 2nd Battalion 2nd Punjab Regiment and a tribal *lashkar*, Major J. W. Williams unfortunately lost his life.

The Tori Khel have been compelled to accept peace terms, which although strict, do not err on the side of severity. The details include the surrender of one hundred hostages with one hundred modern rifles and the forfeiture of the annual tribal cash allowances. According to the latest advices, the tribesmen—with the exception of a handful of irreconcilables led by the Faqir, who is a fugitive—have decided to abandon armed resistance and to initiate negotiations with a view to a permanent settlement.

INDIAN REGULAR RESERVE OF OFFICERS.—No regulations have yet been issued regarding the uniform, etc., to be worn by members of this Reserve, when called to duty, and we understand that it is not possible to give more details about the Reserve at present.

The formation of the Reserve merely puts in a more definite form the liability to recall which has always existed for retired officers of the Indian Army.

Members of the Reserve, however, are authorized to use the initials I.R.R.O. after their signatures in official correspondence, should they desire to do so.

FOREIGN

FRANCE

Mons. Daladier, Minister of Defence, addressing the executive committee of the Radical-Socialist Party on 17th December, 1936, in Paris, declared that the Cabinet had never for a moment contemplated any reduction in the two year period of military service or any refusal to vote the necessary financial credits. France, he said, now had about 600,000 men under arms, of whom 150,000 were in North Africa, leaving only 450,000 to defend the soil of the Republic.

Across the Rhine, stood a country with a relatively high birthrate and a standing army of 800,000, exclusive of labour battalions and armed police. The Minister declared that France must be on her guard against a surprise attack, such as was not possible in 1914.

The new Minister was appointed on 6th June, 1936, only two days after Mons. Léon Blum came into power as the leader of the Popular Front and is the first civilian in the history of France to assume the responsibility for the entire organization of the national defences by land, by sea, in the air and in the factories.

GERMANY

MANPOWER STATISTICS.—A record low figure of young men, fit for military service, will be reached next year, according to the *German Army Year Book* for 1937, in Great Britain. The numbers of youths, reaching the age of twenty during 1937 are stated to be: Germany, 313,000; England, 296,000. As this development is supposed to show that Germany is the backbone of Europe and that England's position in the world is seriously threatened, the statement is worthy of examination.

The population of Germany is, according to the latest returns, sixty-six millions, and of Britain rather over forty-four millions. The numbers of young men in Germany should therefore normally exceed the youth of Britain in the proportion of six to four. Furthermore, the German estimate has omitted to include Scotland,

the addition of which to the British birthrate, brings the total of the United Kingdom to 321,000, i.e., slightly more than the Reich's total. Figures can, of course, be made to prove almost anything. But this surprising conclusion does not appear to support the German claims, and, while no authority would declare that the birthrate figures in the United Kingdom were entirely satisfactory, the comparative totals seem to show that the position in Germany is, at least, no better.

ITALY

As a result of the measures announced by Signor Mussolini to the Cabinet in October, 1936, a rapid " speed up " in arms production and substantial increases in the personnel of the fighting forces have been effected. Munition factories, of which there are about 1,200, have been ordered to work a sixty-hour instead of a forty-hour week.

New aerodromes are under preparation in the valley of the Po, on the Adriatic and West coasts and in Sardinia and Sicily. Many factories are to be converted to the exclusive manufacture of aero engines and a steep rise in the number of student pilots is planned.

Twenty battalions of Blackshirts are to be enrolled with a view to their incorporation in the Colonial Army.

TURKEY

National Defence.—The Kamutay (Grand National Assembly) has voted an extraordinary credit of twenty-five million Turkish pounds, to be spent on aircraft, anti-gas precautions and public works, including a strategic railway from Sivas to Erzerum and the completion of the motor road from Trebizond to the Persian frontier.

The Turkish standing army consists, according to reports, of about 150,000 men, including 20,000 officers, while about 80,000 men are conscripted annually and pass into the various categories of trained reserves. Every fit man is called up for service at twenty-one years and serves for one and a half years in the infantry or for two years in the technical arms. Owing to War losses, the numbers of fit young men are abnormally low, but this situation will gradually improve.

UNITED STATES

Army Increase.—A substantial increase in the U.S. Army estimates for 1936 was authorized by the Appropriations Committee of the House of Representatives and a budget of £108,000,000 (to include the Army Air Corps) was approved, compared with £84,000,000 the year before.

The measures to be taken included the reinforcement of the Regular Army from 140,000 to 150,000 men and the expansion of the National Guard to a total of 200,000; £2,000,000 were also to be spent on the renovation of coast defences, particularly at Hawaii, Panama, and on the West coast.

The Senate again raised the total of appropriations to £120,000,000 on the evidence of General Malin Craig, C.G.S., who reported the various deficiencies in the Army and Air Corps.

The Secretary for War, Mr. H. Woodring, has submitted a report published 21st December, 1936, to the President asking for an increase in the Army to a total of 14,000 officers and 165,000 men. The National Guard, he states, should be enlarged and used mainly for internal security and recommends the building up of a reserve of 150,000 enlisted specialists, to form a nucleus in the event of a major war.

AIR NOTES

HIS MAJESTY THE KING

Message to the Royal Air Force.

His Majesty's gracious message to the Royal Air Force is published at the beginning of this Journal.

The following reply was sent by the Secretary of State for Air :—

" Secretary Viscount Swinton, with his humble duty, begs leave on behalf of the Royal Air Force to thank Your Majesty for Your Majesty's gracious message, and to express to Your Majesty the loyal devotion of all ranks of the Service."

Marshal of the Royal Air Force.

His Majesty the King has been pleased to assume the rank of Marshal of the Royal Air Force, with effect from 11th December, 1936.

Air Aide-de-Camp.

Group Captain K. R. Park, M.C., D.F.C., has been appointed Air Aide-de-Camp to His Majesty the King in succession to Air Commodore R. Leckie, D.S.O., D.S.C., D.F.C., who relinquished the appointment on promotion to his present rank on 1st January, 1932.

ROYAL AIR FORCE

H.R.H. the Duke of Gloucester.

His Majesty the King has been graciously pleased to appoint His Royal Highness Henry William Frederick Albert, Duke of Gloucester, K.G., K.T., K.P., G.C.M.G., G.C.V.O., to be an Air Vice-Marshal in the Royal Air Force and to be Personal Aide-de-Camp to His Majesty.

Promotions.

The undermentioned promotions were made with effect from 1st January, 1937 :—

Air Chief Marshal to be Marshal of the Royal Air Force.—Sir E. L. Ellington, G.C.B., C.M.G., C.B.E.

Air Marshal to be Air Chief Marshal.—Sir H. C. T. Dowding, K.C.B., C.M.G.

Air Vice-Marshal to be Air Marshal.—W. R. Freeman, C.B., D.S.O., M.C.

Air Commodores to be Air Vice-Marshals.—H. R. Nicholl, C.B.E. ; L. A. Pattinson, D.S.O., M.C., D.F.C. ; W. L. Welsh, D.S.C., A.F.C.

GROUP CAPTAINS TO BE AIR COMMODORES.—C. H. B. Blount, O.B.E., M.C.; E. W. Norton, D.S.C.; A. C. Maund, C.B.E., D.S.O.; C. W. Nutting, O.B.E., D.S.C.; R. Leckie, D.S.O., D.S.C., D.F.C., A.D.C.

WING COMMANDERS TO BE GROUP CAPTAINS.—H. I. Hanmer, D.F.C.; A. J. Capel, D.S.O., D.F.C.; R. T. Leather, A.F.C.; J. H. d'Albiac, D.S.O.; J. B. A. Baker, M.C.; R. M. Drummond, D.S.O., O.B.E., M.C.; A. N. Gallehawk, A.F.C.; A. Coningham, D.S.O., M.C., D.F.C., A.F.C.; E. O. Grenfell, M.C., D.F.C., A.F.C.; F. H. M. Maynard, A.F.C.; D. Iron, O.B.E.; F. J. Linnell, O.B.E.; J. H. Simpson.

HONOURS AND AWARDS.

The King has been graciously pleased to approve the following honours and awards :—

C.B. (Military).—Air Vice-Marshal R. E. C. Peirse, D.S.O., A.F.C.

D.S.O.—Squadron Leader H. M. Massey, M.C.

M.C.—Flight Lieutenant A. H. Owen, Flight Lieutenant L. V. Bennett, Flying Officer R. G. Yaxley, Pilot Officer W. Foulsham.

D.F.C.—Flight Lieutenant R. W. M. Clark, Flight Lieutenant C. H. Tighe, Pilot Officer R. E. Burns, Flying Officer R. G. Seys.

The above awards were made in recognition of gallant and distinguished services in connection with the emergency operations in Palestine during the period April to September, 1936.

AIR FORCE CROSS.—Squadron Leader F. R. D. Swain; Flight Lieutenants V. G. A. Hatcher, J. R. Whitley, H. Broadhurst, H. P. Fraser; Flying Officer (Hon. Flight Lieutenant) C. F. Uwins (Reserve of Air Force Officers).

APPOINTMENTS.

The following appointments have taken effect as from the dates shown :—

AIR VICE-MARSHALS.—C. L. Courtney, C.B., C.B.E., D.S.O., to be Air Officer Commanding British Forces in Iraq—February, 1937; R. E. C. Peirse, C.B., D.S.O., A.F.C., to Air Ministry as Director of Operations and Intelligence and Deputy Chief of the Air Staff—January, 1937; J. E. A. Baldwin, D.S.O., O.B.E., as Air Officer Commanding R.A.F., Cranwell—21st December, 1936; L. A. Pattinson, D.S.O., M.C., D.F.C., to be A.O.C. No. 23 (Training) Group—February, 1937.

AIR COMMODORES.—R. M. Hill, A.F.C., to Headquarters, R.A.F., Palestine and Transjordan, in command—15th September, 1936; A. W. Tedder, to Headquarters, R.A.F., Singapore, as Air Officer Commanding—11th November, 1936; S. W. Smith, O.B.E., as Air Officer Commanding, No. 1 (Bomber) Group—7th January, 1937; A. G. R. Garrod, O.B.E., M.C., D.F.C., to be A.O.C. Armament Group—February, 1937.

GROUP CAPTAINS.—I. T. Lloyd, to R.A.F. Station, Pembroke, in command—4th November, 1936; A. J. Miley, O.B.E., as Air Attaché, Buenos Aires—10th November, 1936; J. C. Russell, D.S.O., to R.A.F. Station, Scampton, in command—16th November, 1936; F. E. P. Barrington, to R.A.F. Station, Calafranca, Malta, in command—9th November, 1936; A. S. Morris, O.B.E., to Aircraft Depot, Hinaidi, in command—11th November, 1936; C. O. F. Modin, D.S.C., as Senior Equipment Officer, Headquarters, R.A.F., Iraq—18th November, 1936; R. G. Parry, D.S.O., to R.A.F. Station, Dishforth, in command—7th January, 1937.

Royal Air Force Expansion.

The following is a brief summary of the position of the R.A.F. Expansion, part of which was originally authorized in May, 1935, and the major part sanctioned in March, 1936.

The programme, as it now stands, provides for a Metropolitan Air Force of 1,750 first line aircraft, the extension of the Overseas Force to about 450 first line aircraft, and for the doubling of the Fleet Air Arm. The main section of the Metropolitan programme is due for completion this year, and the balance, together with the additions to the Overseas Air Force, will be undertaken in subsequent years. The further expansion of the Fleet Air Arm is mainly dependent on the date the new aircraft carriers, now under construction for the Navy, are ready for commission.

New Stations.—Over forty sites have been acquired, and the work in connection with the construction of new stations for the accommodation of squadrons, the establishment of schools, armament training camps, and other ancillary units, is proceeding in a satisfactory manner. Fourteen new stations have already been occupied, and six others will be opened at an early date. Pending the completion of further stations arrangements have been made to accommodate temporarily certain new squadrons at existing stations and at civil aerodromes.

Increase in Strength.—Since May, 1935, the strength of the Metropolitan Air Force has been increased from 52 Squadrons with a first line establishment of 580 aircraft, to 87 squadrons with a first line establishment of 1,076 aircraft.

Recruitment and Training.—Approximately 13,000 completed applications have been received for entry either as officers on short-service commissions or as airman pilots, and the full number of 2,060 pilots required from civil life under the 1935 Programme were accepted before the end of 1936. Of these nearly 1,100 have already completed the courses of flying training at civil and service schools, whilst the majority of the remainder are at present undergoing training preparatory to taking up flying duties with squadrons. This part of the recruiting programme has proved to be so satisfactory that nearly 200 pilots have already been accepted for the requirements in the new financial year.

Nearly 21,000 additional airmen were required under the Expansion Scheme, and of these over 19,000 (including airmen re-enlisted) have been accepted for service. From this number 14,600 have already been posted to units for duty after satisfactorily completing the course of training in their respective trades. The number required to fill the courses beginning by 31st March is just under 1,700, vacancies existing for skilled fitters who are accepted for service up to 42 years of age; aircraft hands for training as armourers, wireless operators and fitters' mates, for which suitable candidates up to 32 years of age are accepted; and aircrafthands, general duties, the age limit for which is 18 to 26 years. A small number of vacancies in other trades also remain to be filled.

The intake of boys has considerably increased during the expansion period, no fewer than 3,090 boys having been entered as Aircraft Apprentices for training in one of the skilled trades at the Royal Air Force training establishments at Halton or Cranwell. The number of apprentices in training at Halton alone is now 3,700. In addition, 950 boy entrants have been accepted for training as wireless operators, armourers or photographers.

R.A.F. Volunteer Reserve Scheme.—To cater for the training of the new Royal Air Force Volunteer Reserve, details of which have been given in previous Notes, twenty-two centres have now been selected, subject to satisfactory agreements being concluded.

The first thirteen are at existing Civil Flying Training Schools, and the next five are intended to serve the provincial areas indicated. A further site for the London area is under consideration in addition to those included above. It is expected that a number of the centres will be available for training in the near future.

Organization.

New Station Headquarters.—The following new Station Headquarters have been formed :—

Headquarters.	*Command.*	*Date.*
Leconfield ..	No. 3 (Bomber) Group	3/12/36
Dishforth ..	No. 3 (Bomber) Group	3/12/36
Usworth ..	Coastal	14/12/36
Bicester	No. 1 (Bomber) Group	21/12/36
Odiham ..	Fighter Command in No. 22 (Army Co-operation) Group	31/12/36
Hemswell ..	No. 3 (Bomber) Group	31/12/36

No. 2 Armament Training Camp opened at Aldergrove on 6th October last in the Armament Group under Training Command.

General.

Visit to the German Air Force.—In response to an invitation received from the German Air Ministry at the beginning of December, a small party of Royal Air Force Officers paid a visit to the German Air Force. The party consisted of Air Vice-Marshal C. L. Courtney, C.B., C.B.E., D.S.O., Deputy Chief of the Air Staff, Air Commodore D. C. S. Evill, D.S.C., A.F.C., Wing Commander R. V. Goddard, and Wing Commander M. Moore, O.B.E.

It will be recalled that General Milch and General Kitzinger of the German Air Ministry visited this country last year.

Air Attaché to Turkey.—Wing Commander T. W. Elmhurst, A.F.C., has been selected as Air Attaché, Ankara, and will take up his duties shortly. He is the first Air Attaché to be accredited to the Turkish capital.

Stores Branch.—Change of Title.—In view of the highly technical equipment in use in the Royal Air Force, and the responsible duties falling to the officers of the Stores Branch in connection with this equipment, the Air Council have reached the conclusion that the present title of the branch is not appropriate. They have accordingly decided that the title shall be changed to " Equipment Branch." The officers of the Branch will in future be known as Equipment Officers. The revised nomenclature will be brought into use forthwith.

World Height Record.—The Royal Aero Club has been officially informed that the altitude flight of Squadron Leader F. R. D. Swain, Royal Air Force, on 28th September, 1936, from the Royal Aircraft Establishment, South Farnborough, Hants, in a Bristol " 138 " monoplane with special Bristol " Pegasus " engine, has been homologated by the *Fédération Aéronautique Internationale* as the world height record in Class C (heavier-than-air craft). The official figures are 15,223 metres, or 49,944 feet.

AUXILIARY AIR FORCE

H.M. The King

His Majesty the King has been pleased to assume the appointment of Air Commodore-in-Chief of the Auxiliary Air Force.

OVERSEAS COMMANDS

Flights.

No. 230 (F.B.) Squadron's Flight to the Far East.—The five Singapore III flying boats of No. 230 (F.B.) Squadron left Pembroke Dock for Singapore on 14th October, 1936, arriving at Singapore on 6th November. The route followed was Pembroke Dock—Mount Batten—Berre—Malta (three aircraft)—Aboukir (two aircraft)—Lake Habaniyah—Basrah—Ras el Khaimah—Karachi—Allahabad—Calcutta—Mergui—Singapore.

Inter-Command Flight No. 36 (T.B.) Squadron.—No. 36 (T.B.) Squadron, twelve Vildebeest aircraft, left Singapore on 3rd November, 1936, on an inter-command flight to India.

The return flight was made in easy stages, and from Akyab to Tavoy the squadron divided so that the various emergency landing grounds in Burma might be visited and inspected.

The squadron reassembled at Tavoy on 28th November, having visited landing grounds at Kyaukptu, Mazin, Sandoway, Rangoon, Fenton Point, Gwa, Pagoda Point, Kyaikto, Moulmein, and Ye.

On 29th November it flew to Bangkok where it remained until 2nd December before continuing the flight to Singapore which was reached on 5th December, visits having been made to the landing grounds at Mergui, Alor Star, Victoria Point, and Penang, en route.

Iraq to Aden Flight.—An inter-command flight from Iraq to Aden and back, via the Hadramaut coast was carried out by a flight of five Wapitis of No. 55 (B) Squadron accompanied by a Valentia of No. 70 (B.T.) Squadron.

Gilgit Flight, 1936.—In previous years, an annual flight to Gilgit was carried out by five single-engine aircraft from one of the Bomber Squadrons of No. 1 (Indian) Group. Last year, the Air Officer Commanding accompanied the flight, which was carried out by an aircraft of the Bomber Transport Flight, Lahore. On 20th October, the aircraft flew from Delhi to Chaklala. The next morning the flight was continued to Gilgit via the Indus Valley. During the stay at Gilgit a reconnaissance flight was carried out to the India-Sinkiang Frontier via the Hunza Valley, Pasu, Sost, Misgar and Murkushi, and a short flight over Gilgit was given to important Mirs. On the morning of 24th October the aircraft returned to Chaklala via the Babusar Pass and Kaghan, carrying out a reconnaissance of this route. The aircraft refuelled and returned to Delhi, arriving the same afternoon. The total flying time was 23 hours.

INDIA

Chitral Reliefs, 1936.—The biennial relief of the Chitral garrison was carried out during September. In previous years the relief lasted for approximately one month, the relieving and relieved columns marching between Darai and Chitral. This year the relief between Dargai and Dir was carried out by motor transport. During the passage by the M.T. echelons through the Kamrani Pass aircraft were provided by No. 20 (Army Co-operation) Squadron for reconnaissance purposes, and, in addition, a flight of bombers of No. 2 (Indian) Wing stood by to render assistance if required. Long-distance sniping by small bodies of Shamozai was reported on two occasions, but the echelons were not delayed.

As an experiment certain Army details, consisting of one company less two

platoons, of the relieving and relieved forces, were transported by air in two Valentias of the Bomber Transport Flight between Chaklala and Drosh on 18th, 19th and 20th September.

ZILLI KHEL WANA WAZIRS.—For some time past the behaviour of this tribe has been unsatisfactory. The principal hostile is Abdulla Jan, of Nikaband, who harbours a band of outlaws, members of which committed two murders at Wana towards the end of 1935. In May, 1935, when Wana Column visited the Dhana Valley, North-West of Wana, hostilities were narrowly averted. The Political Authorities eventually decided to exclude the whole tribe from their winter grazing grounds until satisfactory guarantees had been furnished.

On 27th October, 1936, it was learnt that some of the Zilli Khel had succeeded in evading the blockade. Between the 27th and 30th October, thirteen sorties of No. 5 (Army Co-operation) Squadron, operating from Tank, carried out reconnaissances South of the Gomal River in co-operation with detachments of Frontier Constabulary and South Waziristan Scouts. Several flocks of sheep were captured, and by 30th October it appeared that all had either been captured or driven from the prohibited grazing grounds. These were subsequently returned on payment of a fine. This appears to have had an excellent effect on the Zilli Khel, as the three main sections of the tribe submitted to the Government during November, the blockade being raised for each section as it submitted. The situation is now normal.

ROYAL AUSTRALIAN AIR FORCE

AWARD.—The King has been graciously pleased to approve of the award of the Air Force Cross to Flight Lieutenant R. H. Simms, R.A.A.F.

FOREIGN

AUSTRIA

GROWTH OF THE AUSTRIAN AIR FORCE.—Considerable progress has been made in the past twelve months in the formation of the Austrian Air Force. Five stations have been established, at Aspern (Vienna), Graz, Klagenfurth, Wels, and Wiener-Neustadt, and new hangars, barracks, etc., have been built. New aircraft have been obtained from Italy and more are on order: the Romeo RO 26 two-seater is used for training, and Fiat CR 32 single-seater fighters are expected shortly.

There is an evident shortage of officers, but those seen, although hard worked, were keen and efficient; their only complaint is that they are still largely compelled to fly obsolete types of aircraft, and the delivery of the new types is eagerly awaited. Most of the pilots under training are N.C.O's, who, like the mechanics, are volunteers serving on long engagements. Conscription is only relied upon to supply the equivalent of aircraft hands. All officers are observers as well as pilots. They are entered as Cadets at the Military Academy at Wiener Neustadt, where they receive a three years' course of training. An idea of the size of the Air Force can be obtained from the fact that five officers passed out this year, while eight are due to complete their training next year; the second and first year Cadets at the Academy number seventeen and thirty respectively.

ANTI-AIRCRAFT EXERCISES.—A practice "black-out" of Vienna took place recently. At 11 p.m. a semi-black-out was effected, only every other street lamp being alight and all arc lamps being extinguished. At 12.30 a.m. a total black-out was put into force. All electric signs were extinguished and owners of cafés and

restaurants had been instructed to take the necessary precautions to prevent any light from their premises from showing outside. Trams and motor cars had dimmed lights and railway traffic was brought to a standstill for the period of the complete black-out, i.e., one hour.

The Austrian Press reports on the success of the night's activities are varied, some saying there had been still too much light showing, whilst others again said that the whole practice had been a perfect success. It is reported that some of the extreme elements of the Left lit bonfires at various points in an effort to hinder this practice black-out. On the whole, the population took things in a good humour and, in fact, among a certain class, it was made the occasion for celebrating to a later hour than usual.

DENMARK

AIR DEFENCE CORPS.—The Copenhagen Volunteer Air Defence Corps has now a strength of 750 men. The Corps operates anti-aircraft batteries, and when occasion arises will co-operate with the Army. The Corps has only been in existence six months.

FRANCE

REORGANIZATION OF THE AIR FORCE.—In a Decree published on 3rd October, 1936, a new organization for the French Air Force was laid down.

In bringing the reorganization decree to the notice of the President of the Republic, M. Cot, the Air Minister, said that the Air Force, by its ability to intervene immediately in the battle and by its extreme mobility, is *par excellence* an *armée de converture*. This being so, its peace-time organization must be adapted very closely to its organization in war, and the means by which an attempt has been made to do this are the following :—

(*a*) The creation of large fighting and bombing formations for direct action.
(*b*) The formation of air force groups, corresponding with military and naval regions, for purely co-operational duties.
(*c*) The introduction of a reinforced territorial organization, designed to provide the necessary ground services to fit the Air Force to fight.

The Air Force in France is thus divided into operational and territorial commands, which exist side by side. The operational commands are concerned only with the air force units acting independently for the defence of the territory ; the territorial commands are concerned with all the services which are needed to enable the Air Force to live and fight, with the provision and training of the purely co-operative units working under the Military and Naval Commanders, with balloons (protection and observation), with mobilization, reserve training, etc., etc.

The Territorial Command.—In the past, the command of the Metropolitan Air Force has been divided between four Air Regions, and these have been retained under the reorganization scheme as the four Territorial Commands. They are numbered I to IV, and have their headquarters at Dijon, Paris, Tours and Aix-en-Provence respectively. The regions are divided into subdivisions, two per region, and these again into Regional Air Commands, nineteen all told, each of which corresponds with, and carries, the same identification number as the Military region covering the same territory. As the Subdivisional Commanders, through the Regional Air Commanders are responsible for Army and Navy air co-operation, they have under their orders for this purpose formations known as *Cercles Aériennes*,

which consist of a cadre of regular personnel and a floating population of Reservists, who carry out their Reserve training as Army Co-operation pilots in the " Cercles," which in wartime become the Observation units attached to the Army Corps.

The Operational Command.—The Operational Command takes the form of two Air Corps, the first with its headquarters in Paris, comprising all the bomber units, the second, with headquarters at Rheims, containing all the fighter units. These Corps come under the immediate control of the Air Minister. Each Corps is in principle divided into divisions, brigades and *escadres*, although the Fighter Corps, for reason of convenience of handling, is at present to be subdivided directly into brigades. (The *Escadre* consists normally of four *escadrilles* (squadrons) each of from five to ten aeroplanes, according to type; two *escadrilles* form the *Groupe* which is the tactical unit.)

By the system of Air Bases, of which there will be one on every large aerodrome, the Commanding Officers of both the combatant and territorial formations are almost freed from administrative work and will be able to devote themselves entirely to the war training of their units. For the functioning of the Air Base, each Base Commander will have Sections under his control for the administration and feeding of the troops, medical services, armament, wireless telegraphy, meteorology, an aircraft park and repair workshops. In addition, he is made responsible for mobilization arrangements and putting the final touches to the flying training of pilots before they join their squadrons.[1]

GERMANY

Volunteers for the German Air Force.—The Recruiting Depots announce that volunteers of the classes 1900 to 1912 can now apply for short-term service in the G.A.F. for training as pilots, observers, aircraft hands or W/T operators. Men of the 1913 class who have been mustered and who desire to serve with the G.A.F., may also apply. Men entering on this short-term service will be considered as having completed their compulsory military service. The periods of training are: Pilots—6–9 months; Observers—3 months; Aircraft hands—3 months; W/T operators—4 months.

Air Force Exercises.—The following is a translation of an article in the German Press:—

" In August the most important exercises ever held in Germany by the Air Force in collaboration with the civil air defence took place in Central Germany over an extensive area bounded by the towns of Northeim, Cassel, Fulda, Bamberg, Chemnitz and Luckenwalde.

" It was assumed that hostilities had broken out between a ' Red Eastern State,' and a ' Blue Central State,' comprising the central German territory described above, and a ' Green Western State.' The task of the Red air forces was to carry out a sudden attack on the Blue Central State from Grossenhain and Finsterwalde, fly across it and land in the territory of the allied Green Western State and from thence repeat the attack. The Reds had therefore to carry out a surprise air attack immediately on outbreak of war. The task of Blue was to take all measures toward off the attack inevitable in view of the assumed state of affairs. The first object of the Red attack was to wreck the enemy ground organization. For this purpose three wings of bombers were respectively detailed to attack the aerodromes

[1] For details of the French naval air forces, see the article on " Foreign Naval Air Services," p. 157 of this Journal.

at Halle, Merseburg, and Erfurt. Similarly, attacks were carried out on the mobilization centres and larger industrial works of the Blue Central State. The attack on Halle, made from a great height, was met by strong defence from the anti-aircraft artillery, and the civil air defence at Halle was put into action immediately the first warning signal was received. All the shops were closed, all the windows curtained, and the inhabitants were in the air defence cellars and gas-proof shelters. At the end of the air raid the auxiliary services whose task it was to make good the damage caused by the supposed bombing raid, did their work. Decontamination commands were at work, the personnel of the technical emergency aid corps removed all effects of gas and fire. It was interesting that, in the case of a wrecked bridge, high-tension cables had to be removed and an emergency ferry service instituted. The co-operation between all the organizations was excellent.

In Leipzig the exercises entailed restricted lighting and a black-out. At night there were several raids on the Leuna Works which were also in complete darkness and were protected by strong anti-aircraft artillery. These raids were continued on the next day. At sunrise the first Red bombers appeared. However, the Blue fighter squadron held in readiness at Merseburg aerodrome since dawn, to protect the Leuna Works, was able to intervene at the right moment and inflict heavy losses on the enemy. The weather, however, which became increasingly foggy as the day advanced, facilitated the action of the attacking force later, so that it was able to attack the works successfully in spite of the strong defence.

The exercises showed that the training of the German air forces has improved to an extraordinary degree. The flying performances were remarkable. The prescribed paths of flight were maintained at all times and even a thunderstorm did not prevent the units from remaining together and landing at the prescribed destination. The manner in which the raids were carried out showed that the air forces adapted themselves to the tactical requirements imposed by weather conditions and defence.

The anti-aircraft artillery also showed its skill. The co-operation between the Air Force personnel, anti-aircraft artillery, anti-aircraft M.G. sections, Air Signals Corps, and the air raid warning service as well as the civil air defence warning service was satisfactory from every point of view.

Air Defence Exercise in Cologne.—On 19th October, 1936, a large-scale Air-Defence Exercise was carried out in Cologne. All inhabitants were forced to take part, it being pointed out that all large German towns near the frontiers were in a particularly vulnerable position.

The exercise was the final result of a long series of minor operations which had taken place during the last months. According to the Press, the former Chief of Police Lingens should be congratulated on the success of the exercise, as he had got through a tremendous amount of preliminary work, principally in instructing the inhabitants as to the best methods of protecting themselves and also of minimizing damage done by gas, incendiary and high explosive bombs.

At 9 a.m. the sirens sounded. At the first alarm, silence ensued for a second, then all pedestrians could be seen running for the nearest shelters. Special Air Defence Police, equipped with gas masks, appeared, and assisted in directing pedestrians and traffic. Hitler Youths, arriving on bicycles, hoisted yellow-blue-yellow flags in the chief thoroughfares in order to warn cars and lorries coming from the suburbs who might not have heard the alarm sirens. The tram-cars halted at once—all passengers descending—the overhead trolleys were disconnected. All motor cars parked on the sides of the streets, horses were taken from the shafts of

carts and tethered to the backs of the carts or nearby trees or posts. Great care was taken to see that all crossings were free so as to allow the fire brigades and ambulances free passage in case of need. All shops drew down their shutters; private houses closed their windows and drew the curtains. Within about 6 or 7 minutes, no one was to be seen in the streets apart, of course, from the Air Defence patrols, police, and boy messengers recruited from the Hitler Youth. In each house a "Luftwart" (air ward) has been appointed who had to see to it that all inhabitants were brought into the cellars. Open fires were either put out or damped down—gas mains turned off and pails of water and sand brought up to the attics. The exercise was repeated at 10.15 a.m. and at 12.30 p.m. In certain parts of the town it was assumed that gas-incendiary or high-explosive bombs had fallen and the necessary technical staffs were ordered to the spot and dealt in a very realistic manner with the supposed damage.

A Heavy-Oil Aero Engine.—The chief characteristics of the Junkers heavy-oil aero engine, Jumo 205, are as follows. It is a two-stroke counter-piston engine of approximately 600 h.p. weighing 520 kgs., and works on the Diesel principle, possessing neither carburettor nor magneto. There are therefore none of the defects to be contended with in a Junkers heavy-oil engine such as may arise from the complicated nature of a carburettor and magneto, as well as in connection with valve timing. The high compression ratio ensures a more effective expansion of the fuel gases, and consequently a greater heating power from the fuel, i.e., a certain power output can be obtained from the engine with a minimum fuel consumption.

Junkers heavy-oil aero engines are the only Diesel engines in the world to be used in regular air services. The incorporation of the Diesel principle in aero engines was experimented with by Junkers as far back as 20 years ago and the present success with Junkers heavy-oil engines is the result of the work of development which has been carried out over a long period.

Types of Aircraft.—The following are the types of aircraft in general use in the German Air Force to-day:—

Army Co-operation.—Heinkel 46, a two-seater parasol monoplane with radial air-cooled engine.

Long Reconnaissance.—Heinkel 45, a two-seater biplane with water-cooled engine, very similar to the Hart; and Heinkel 70, a military version of the well-known high-speed mail and passenger carrier.

Fighter.—Heinkel 51 and Arado 68, single-seater biplanes with water-cooled engines: roughly equivalent to the British "Fury."

Bomber.—Junkers 52, a three-engined low-wing monoplane: the military version of the 20-seater passenger used by the Deutsche Luft Hansa; and Dornier 23, a twin-engined high-wing monoplane with water-cooled engines.

Dive Bomber.—At present all German Dive Bomber squadrons are equipped with Heinkel 51's. This is probably only a temporary measure.

Coastal Reconnaissance.—Heinkel 60, a two-seater biplane floatplane with water-cooled engine, equivalent to the British "Osprey"; and Dornier "Wal," a military version of the well-known flying boat.

Torpedo Bomber.—Heinkel 59, a twin-engined biplane floatplane.

ITALY

Aerodromes and Aircraft Industry.—Signor Mussolini has announced that about £1,500,000 is to be set aside for the construction of new military aerodromes

in Northern Italy, along the Adriatic and Tyrrhenian coasts and in Sicily and Sardinia. He stated that in spite of increased production of aircraft the rate of production was inadequate and new factories for aero-engine construction would be erected. In this connection the Government Office controlling armaments has authorized the aircraft industry to increase working hours to 60 per week.

A further sum of about £900,000 has also been spent on aerodromes, while the details which have been received of Forli aerodrome opened by Mussolini in September show that these new aerodromes are being equipped with very fine modern buildings with air raid shelters and large underground reserves of petrol and oil.

The new aerodromes are fourteen in number and will chiefly occupy existing landing grounds or small aerodromes where few buildings now exist. It seems that the Air Force units have been increased beyond the number which existing air stations can accommodate, and even when these new air stations are completed, accommodation will be very limited.

With regard to the speeding up of the aircraft industry, it is believed that many causes have led to a failure to produce enough aircraft to programme this year and that the raising of the weekly working hours is necessary to accelerate the production to programme requirements.

Operations in Ethiopia.—With the end of the rains, the roads and tracks are again becoming fit for use and Italian troops are advancing towards the lakes in the Province of Sidamo, in South-Western Ethiopia. They appear to have met with considerable resistance and fierce fighting was reported on 19th October ending in the rout of the Ethiopians who were pursued by aircraft and armoured cars. Aircraft undoubtedly played an important part in this engagement and sixteen bomber aircraft are said to have attacked the Ethiopians.

The role of the Italian Air Force during the last few weeks appears to be daily reconnaissance over the columns which are penetrating the unconquered territory and bombing recalcitrant tribes and villages.

The Italian forces are now in occupation of most of the North and East of Ethiopia including the territory through which the railway to Addis Ababa passes. In the South they are in control of the greater part of the provinces of Boran and Sidamo, while in the West Italian columns have occupied the chief places of importance such as Nekempti, Gore and Gayo.

PORTUGAL

Reorganization of the Naval Aviation Service.—A recent Decree introduced a new organization for the Portuguese Naval Aviation Service. This makes it clear that command is exercised by the General Staff of the Navy, while the Directorate of Naval Aviation is responsible for technical and administrative functions. In addition, regulations for the recruitment of pilots and other personnel, and for the administration of naval establishments and schools, are included in the Decree.

The Naval Aviation Service is defined as comprising all the air forces of the Navy, their staffs and technical directorates, their maintenance services, and all specialist and auxiliary services. The air forces consist of :—

(i) The permanent naval air forces, whether shore-based or embarked in warships.

(ii) The reserve naval air forces, when organized, are to consist of all personnel and material which can be mobilized as an auxiliary to the Naval Air Service.

The functions of the Naval Air Service are defined as :—

(i) Protection of maritime communications.
(ii) Protection and defence, in collaboration with military air forces, of coasts and naval bases.
(iii) Co-operation with the Navy, coastal defence and anti-aircraft artillery.
(iv) Co-operation with the Army and Navy in circumstances in which the theatre of operations makes it preferable to employ naval aircraft.

The squadron is the fundamental unit and consists, normally, of from six to twelve single-engined aircraft, or three to five multi-engined aircraft, of homogeneous type. A squadron is subdivided into sections consisting of two or three aircraft each. Two or more squadrons may be brigaded together into a "group of squadrons." Each squadron should hold a reserve of 25 per cent. of its initial equipment of aircraft. Squadrons may be shore-based in naval aviation stations, embarked in aircraft carriers or in other warships.

The Major-General of the Fleet is in supreme control of the naval aviation forces through the intermediary of the various naval commanders under whom they may be serving. The Directorate of the Naval Air Service is under the control of the superintendent of the naval services and is charged with the technical and administrative direction of the Naval Air Service. It is responsible for the equipment of the Naval Air Service and for all its various subsidiary technical, administrative and training services. It lays down the standards required of equipment purchased for the Service, technical instructions for the use and maintenance of such equipment, and the repair of aviation equipment of every kind, whether carried out in service workshops or elsewhere. It is also responsible for the provision, upkeep and, where necessary, improvement of naval aviation stations and centres. It arranges for the instruction and specialization of service and civil personnel employed in naval aviation units and establishments, and posts such personnel to units, as required.

SOVIET UNION

Corps Commander Khripin, addressing the 8th Congress of Soviets on 29th November last, stated that the Soviet air forces were the most powerful air weapon possessed by any country, capitalist or communist. He asserted that a whole infantry division of parachutists—2,200 men, had been dropped at the Moscow manœuvres this year, followed by a landing of another 3,000 men with guns and arms.

Perhaps the most wonderful aspect of the development of the Soviet Air Forces had been the recruiting and training of technical personnel ; in this the Osoaviakhim (which is a sort of Air League) had played and would continue to play a leading role. In reply to the 70,000 pilots which Goering had called for in Germany, Soviet Russia must train 100,000 pilots.

REVIEWS OF BOOKS

GENERAL

Hindenburg : The Wooden Titan. By John W. Wheeler Bennett. (Macmillan). 21s.

The story of Hindenburg, like so much of the stuff of which German history is made, is at once dramatic, heroic, and tragic. The gigantic, four-square figure of the old Field Marshal looms up like some strange Nordic tribal deity against a background of mighty and fateful events—the World War, the magnificent fight put up by the German armies for four years and their final collapse, the Revolution, the desperate efforts of the Weimar régime to maintain itself against avowed enemies at home and lukewarm friends abroad, Stresemann's fight and death, Bruening's struggle with the Great Depression, the spectacular rise of Hitler, the tortuous political manœuvres of Schleicher and Papen, and the advent of the Third Reich. In Mr. Wheeler Bennett's hands the story has not lost in tragedy or dramatic power, but he has been at some pains to get at the truth and the heroics have suffered accordingly.

Hindenburg was one of the few mortals to whom it has been permitted to lead three lives. When he retired as a Lieutenant-General in 1911 he already had behind him two victorious campaigns and a long life of useful service to his country. He was then, and always remained, curiously free from personal ambition, and, at the age of 64, could settle down in Hanover to enjoy the evening of his days with a comfortable sense of duty well done. Mr. Wheeler Bennett might have given us a little more light on this first life, particularly on the time when Hindenburg was an instructor at the German Staff College.

His second life began at 3 a.m. on August 23rd, 1914, when Ludendorff, the newly appointed Chief of Staff of the Eighth Army, collected his Commander on the platform of Hanover station. Within a few days he had become the victor of Tannenberg and " the most popular man in Germany " : the Hindenburg legend was born. His career for the next four years is the story of the struggle of the German army against great odds, its successes and failures. There is ample evidence that on more than one occasion Hindenburg saved the situation by keeping his head when Ludendorff's more brittle nerve had snapped. There is much food for thought in the very full account of the relations between the Higher Command and a succession of civilian Chancellors and of the events that took place at Spa in November, 1918.

After the signature by Germany of the Peace Treaty, Hindenburg's work seemed done and he retired once more to Hanover. His reputation and fame first made at Tannenberg had stood the searching test of four years of war far better than that of any of the other of the leading figures on the German side. Mistakes there had been, but the old man who bore this crushing load of responsibility had fought gamely to the end, the achievement of the German army was indelibly bound up with his name, and his countrymen rightly recognized in him a great German and a great soldier.

Unhappily there were those who now felt that in the interests of the army the truth should be improved on, and the result was the invention of the " stab in the back " legend to explain away defeat.

> " Like Siegfried, stricken down by the treacherous fear of savage Hagen, our weary front collapsed."

Mr. Wheeler Bennett does well to nail down this legend.

At the age of 78, after six more years of retirement, Hindenburg was called to the Presidency and took the oath to preserve the Constitution of the Weimar Republic. From now on until the day of his death he was condemned to go on fighting the losing battle of a cause that was alien to the whole tradition in which he had been brought up and which the verdict of history may well declare to have been lost before he adopted it. His third life was pure tragedy.

Mr. Wheeler Bennett, who knew personally most of the principal characters, is at his best in piloting us through the maze of politics and intrigues that filled the crucial years of Hindenburg's first and second terms of office as President. No man can write a readable book without some sort of bias and the author's vision may be a trifle coloured by his friendship for and admiration of Bruening. But it will probably be a long time before anyone succeeds in producing a better or more valuable account of these events. This book should be widely read.

The Conquest of Morocco. By Vice-Admiral C. V. Usborne, C.B., C.M.G. (Stanley Paul). 18s.

Vice-Admiral Usborne is to be warmly congratulated on this clear and excellent account of the acquisition of Morocco by France. Besides being a record of military operations, it shows how the country has been civilized and placed under sound government, principally through good generalship and understanding of the natives by General Lyautey, notwithstanding the obstruction of politicians who expected him to produce results without being prepared to defray the cost.

Commencing with a short history of Morocco from Roman times to the conquest of Algiers by Admiral Duperré in 1830, the author goes on to describe the efforts of British diplomacy during the next forty years, whilst acquiescing in the occupation of Algiers by France, to resist her efforts to overrun Morocco, and how in spite of these the French continued to gain influence in Moroccan affairs. From 1900 onwards, they continued to penetrate the country from the East and to undermine the power of the Sultan. In 1903, General Lyautey appeared on the scene and began his systematic conquest, which was not completed until 1934. During the Great War a new rebel leader worked his way into power ; this was Abdel Krim who, starting with a few adherents, eventually collected a large force with which he defeated the Spaniards. Having formed a republic of his own in the Riff and organized a disciplined and efficient army, he succeeded in capturing a rival chief, Raisuli, who had given much trouble to the Spaniards in the West of Morocco. He then sought to get rid of the French as well as the Spaniards. In 1924 he launched an attack on a tribe to the southward, but General Lyautey came to their rescue. and Krim was driven off.

Lyautey, who had been ill, returned to France and demanded adequate forces to deal with Krim, but he did not get them, and during 1925 there was hard fighting and many French posts to the northward had to be evacuated. At last the French Government sent Maréchal Petain with two whole divisions to assist Lyautey. Krim was defeated, but for years the tribes in the Atlas were in revolt. Eventually,

in 1934, a large expeditionary force, comprising tanks, aeroplanes, mechanized artillery and infantry, was organized, and made a concerted attack on the Great Atlas from three directions. This resulted in comparatively easy victories for the French armies and the complete pacification of the country which is now administered by Civil Governors and what corresponds to a military police force.

By this work Admiral Usborne has provided students of war with yet another example of the old maxim that, if you would achieve victory at the minimum cost in lives and money, you must never underestimate your enemy and always employ a really adequate force at the outset: Mussolini adopted this principle with conspicuous success in Abyssinia. We would commend this book, not only to our Members, but also and especially to all those in whose hands our destinies may rest in a future war in the hope that they will take this lesson to heart.

The First of the League Wars. By Major-General J. F. C. Fuller. (Eyre and Spottiswoode). 10s. 6d.

Major-General Fuller has always had a reputation for producing unorthodox views, and in this book he has certainly run true to form.

He divides his book into four parts, the first being an account of the Italo-Ethiopian War which occupies 89 pages; the remaining three, of some 220 pages, are devoted to a study of what he calls "totalitarian war," and an exposé of the menace which the futility of the League constitutes to Europe. He seeks to prove that democracy can no longer stand up to totalitarianism, and offers suggestions for building up a British Facist State.

To the military student Part I is disappointing, since it is obvious that the author has aimed rather at producing a background for his treatise on totalitarian war than an accurate or authoritative account of the war. He not only sticks to several of the debatable theories which he produced in his earlier writings, but also makes a number of inaccurate statements, while he appears to stress certain points to suit himself, leaving other equally important points practically untouched. For instance, he attributes the Italian decision to make their main advance in the North entirely to the fact that political preparation had been carried out there, but quite omits to mention the overwhelming necessity of a quick occupation of Adua and Macalle for psychological reasons. The implication that Marshal Badoglio prepared the stage for the battle of Amba Aradam before he knew that there would be a hostile army to strike at is not borne out by that commander's own accounts. The advance of the Assab Column to Sardo actually began on 8th March, and Sardo was occupied on 12th March—a total of five, not sixteen days. The length of advance as claimed by Marshal Badoglio himself was "over 130 km.," and even if measured from the sea itself, was considerably less than the 220 miles stated by General Fuller. It is true that the column was supplied by the air force, but there is no authentication for the statement that troops were carried in the aeroplanes. The battle of Shire is dismissed in two lines, whereas it lasted a full four days and was the most evenly contested, and from the Italian point of view, the most expensive encounter as regards casualties of the whole war.

General Fuller blames the old Generals, whom he calls "men of the Clausewitz epoch," for the very large numbers of troops employed in the East African campaign. Actually the numbers were arbitrarily fixed by Mussolini himself in February, 1935, and the Commander-in-Chief (General de Bono) had no say whatever in the matter. To allude to the Bande as "no more than an armed rabble" hardly gives a fair picture of their value; on the southern front they bore the brunt of the whole

campaign. Finally, he frequently refers to the " phalangical advance " undertaken by General de Bono which, he states, was promptly changed into an advance by a number of columns as soon as Marshal Badoglio took over. In actual fact, General de Bono carried out his advance on a front of fifty miles in three columns, each consisting of a corps of two divisions. Marshal Badoglio struck at Amba Aradam on a front of only ten miles with two corps each of three divisions, while for his blows in the Tembien and in Shire he employed two corps, consisting of five and six divisions respectively, on each occasion. There was, therefore, no real breaking up into independent columns until after the Ethiopian northern armies had been annihilated.

The rest of the book is of more value to the political than to the military student. Even here, however, General Fuller is inclined to twist facts to suit his purpose as, for instance, on page 156, where he makes the statement that " It was the Abyssinians slave-raiding which started the aggression." Abyssinian slave-raiding might on many occasions have provided a legitimate pretext for a British-Abyssinian war but hardly for an Italo-Abyssinian one, since the slave-raids, with few exceptions, were conducted against British or British-protected territories.

Except for some of its military lessons, this book is of little value as a history of the war, much of it being taken up in an exposition of a certain trend of political thought.

Japan's Feet of Clay. By Freda Utley. (Faber and Faber). 15s.

Briefly stated, Miss Utley's thesis is : (*a*) that Japan is bluffing the world into imagining that she is far stronger than she really is ; (*b*) that her dependence on the British Empire and the United States for the bulk of her essential requirements in the matter of raw materials and markets for her manufactured goods renders her particularly vulnerable to economic pressure from without ; (*c*) that it is only through the medium of her more moderate and liberal minded statesmen that Japan can hope to replace her economic feet of clay by something stronger and more durable ; and (*d*) that consequently Japan's " moderates " are more to be feared and distrusted than her reactionary chauvinists.

It is an interesting theory ; but, although the argument may at first sight appear hard to refute, it overlooks a number of factors which, in the event of a head-on collision in the Far East, would play a vitally important part in the ensuing operations. It presupposes, for example, that, in the event of Britain and the United States combining for the purpose of applying the coercive measures which Miss Utley appears to advocate, Japan would be cowed into submission by the mere threat of losing her markets and of being cut off from her main sources of supply. That Japan, at the first sign of active coercion, would probably seize the initiative and get in the first blow, does not seem to have crossed her mind. Yet Japan's vastly superior strategic position in the Western Pacific in the opening stages of such a conflict would, in point of fact, give her an initial advantage of immense importance, and this advantage she would most certainly exploit to the full. Economic and financial exhaustion might eventually bring her to her knees, but not before she had inflicted such serious blows to her opponents that the victors would have nothing to show for their trouble but a heavy toll of dead and wounded, a vastly increased national debt, and a chaotic Asia, which would provide a happy hunting ground for Soviet exploitation and intrigue.

It is facts—or, at least, probabilities—such as these that theorists like Miss Utley conveniently ignore, and the author of this book reduces the value of even her

most telling arguments by her indulgence in over-statement and, in many instances, misstatement of facts, and by the vehemence and viciousness with which she denounces Japan and all its works.

General Grant's Last Stand. A Biography. By Horace Green. (Scribner's). 12s. 6d.

The chief interest of this book lies in the story of Grant's fight against cancer, his race with death, and how he won by a short head. In his sixty-third year, he suddenly found himself ruined by the failure of the private bank in which he had placed all his investments and his wife's fortune. In this extremity he was driven to accept the proposal, previously declined, of the Century Company, that he should write for their Magazine four articles on the Civil War for 500 dollars each. The first article, on Shiloh, was such a success that the Company entered into an agreement with him to publish his personal memoirs, which were to cover all his campaigns.

Grant had barely started this task, when he became conscious of trouble in his throat. Unfortunately he could not see a specialist at once, and the disease got four months' start. Mark Twain, by an offer of 25,000 dollars as advance royalty for each volume written, secured the contract for the publication of the Memoirs. In spite of the ravages of his terrible disease, Grant stuck doggedly to his work. Until his voice failed, he mainly dictated the narrative ; the latter part he wrote in pencil upon a pad on his knee. The Memoirs were finished five days before he died : He had achieved his object ; he had provided his widow with an income on which she could live in comfort—the royalty for the first two years after publication amounted to 450,000 dollars.

The reader cannot fail to be moved to pity and admiration of Grant in his last great fight and victorious battle against fate.

Mesopotamia : The Last Phase. By Lieut.-Colonel A. H. Burne, D.S.O. (Gale and Polden). 5s.

This volume covers the period from the fall of Baghdad in March, 1917, to the Armistice, and includes the battles of Istabulat, Ramadi, Khan Baghdadi and Sharqat.

The story of the campaign is briefly and clearly written and the lessons are emphasized. Of the various operations described, Sharqat is perhaps the most interesting to students, as this battle may well be the prototype of the mobile warfare of the future.

Readers will be glad to know that the author gives full credit to British leadership and to the skill and determination of the British and Indian soldiery.

Combat Intelligence—Its Acquisition and Transmission. By Major Edwin E. Schwien, U.S. Army. (The Infantry Journal, Inc.). $2

This book deals with " appreciating the situation " in general, and with " the courses open to the enemy " in particular. The author's ideas are severely practical and his examples are drawn mainly from the operations on the Western Front in 1914. He demonstrates clearly the impossibility of divining the enemy's intentions or even his probable course of action, and points out that an appreciation must take stock of every possible enemy action, which might affect " the plan." His arguments are supported by an excellent set of maps.

This work is intended to make readers think, and for that reason alone it can be confidently recommended.

Titles and Forms of Address : A Guide to their Correct Use. (A. & C. Black, Ltd.). 3s. 6d.

This little reference book will be a help to all in need of guidance in addressing titled people, whether formally or socially. All grades of titles and distinctions are dealt with from Royalty downwards, and the whole is arranged in a clear and concise manner.

NAVAL

Jane's Fighting Ships. Edited by F. E. McMurtrie, A.I.N.A. (Sampson Low, Marston & Co., Ltd.). £2 2s.

The contents of this invaluable Annual forms the basis of a special article in this number of the JOURNAL entitled " The Trend of Naval Construction " (see p. 102). Except for one or two minor errors and oversights, it is as always a model of well-ordered detail and graphic information. The standard of photographs and indentification silhouettes is steadily improving.

The introduction of a list of ships included in current building programmes which has been adopted in the case of several navies is a most useful feature which we hope to see extended. The conversion table (feet and inches to metres and millimetres), supplied as a book-marker, is another asset which might be made more comprehensive in the next edition. By no means the least interesting part of this publication is the well-printed and illustrated advertisement section.

MILITARY

The Infantry Commander's Pocket Book. By Infantry Officer. (Gale and Polden). 1s.

This little book slips easily into the pocket and contains a summary of useful tactical information for junior commanders in the field.

REGIMENTAL HISTORIES

The Welsh Regiment of Foot Guards. By Major C. Dudley Ward, D.S.O., M.C. (John Murray).

This book is unique of its kind and approaches Regimental History from an entirely new angle. Events are not taken in their chronological order, but are grouped under appropriate headings, such as " Rest and Training," " Trench Routine " or " Assault," etc., irrespective of the actual dates on which they took place. The result is an admirable record of the action of the Regiment in all the various operations of war.

From a psychological point of view, the history not only classifies the tactical lessons of the Great War, but points out clearly to every Welsh Guardsman, the high standard of bravery and devotion to duty which his Regiment expects of him.

For the Army as a whole, this book is worthy of close study as the various chapters provide the basis for excellent tactical exercises, both with and without troops. A copy, therefore, should be in the library of every battalion, both at home and abroad, for perusal in amplification of the official training manuals.

The Rifle Brigade, 1914–1918. Vol. II: 1917–1918. By Brigadier-General William W. Seymour. (Butler and Tanner, Ltd.).

Volume II, though dealing chiefly with the operations of 1917–18, includes the story of the 4th Battalion in 1919 in the Caucasus and "The Watch on the Rhine." The close of 1916 found eleven battalions of the Regiment on the Western Front, and one (the 4th) with the Salonika Army. During 1917, the several battalions played a distinguished part in the battles of Arras, Messines, Third Ypres and Cambrai, but space does not permit of a detailed description of their various activities, except to recall the tragic annihilation of the 10th Battalion by the German counter-attack on 30th November, at Cambrai, after a gallant stand.

The great German offensive on 21st March, 1918, again found the Regiment at the post of honour, and the history regretfully records the loss of the 7th Battalion "destroyed by enemy action." When the tide turned, the Regiment was well to the fore, and the 13th Battalion, in particular, gained a striking success on 23rd August, 1918, North of Bapaume, while the 1st Battalion stormed the Drocourt-Quéant Switch, forming part of the "impregnable" Hindenburg Line. The history is strongly bound and clearly printed, and contains a number of excellent maps, opening clear of the text. The Index which covers both Volumes I and II, appears to be detailed and complete.

The Royal Canadian Regiment, 1883–1933. By R. C. Fetherstonhaugh. (Gazette Printing Company, Montreal, 1936). $6.

This volume contains the history of a regular Regiment which has served the Dominion and the Empire with fidelity and devotion for over fifty years. The Royal Canadians first saw active service in Riel's Rebellion of 1885, where they earned their earliest battle-honour. During the Great War, the Regiment served exclusively on the Western Front and bore itself with gallantry and distinction in every engagement in which it took part. Fourteen battle-honours were awarded for its services, nine of which are inscribed on the Regimental Colour. At an inspection of British Army units held in 1917 in France, General Nivelle, Commander-in-Chief of the French Army, who had no preknowledge of the Royal Canadians, remarked, "But that battalion is outstanding. Surely it is an old Regiment with traditions of renown." The history is supplied with ample illustrations and adequate maps, while the Index is worthy of special mention.

History of the 5th Battalion (Pathans) 14th Punjab Regiment. By Major R. S. Waters, O.B.E. (James Bain, Ltd.).

This volume traces the history of the Regiment from its inception in 1858 up to the present day. The frontier experiences of the 40th Pathans commenced at an early stage for in 1888 the regiment formed part of the column which invaded the Black Mountain. Pathans were enlisted as the sole constituent of the unit in 1892, and probably as the result, the battalion received orders in 1904 to march to Tibet, where they stormed Phari Jong and entered Lhassa.

At the outbreak of the Great War, the Regiment found itself on garrison duty at Hong Kong, but orders for the Western Front soon came, and on 26th April, 1915, the battalion went into action at Ypres. After several days of heroic fighting, the unit was withdrawn for rest and reorganization, having lost 320 killed and wounded out of 650 engaged.

The "Forty Thieves" have always been in the forefront of battle, so we record without surprise that a detachment of the Regiment under the command of Major (now Brevet Lieutenant-Colonel) W. F. Charter was on duty as Legation Guard in

1935–36 at Addis Ababa, where their gallant conduct was praised by the Foreign Secretary, Mr. Eden.

The author, who is an old officer of the Regiment, is to be congratulated on a most interesting and valuable history.

AIR

Jane's All the World's Aircraft. Compiled and edited by C. G. Grey and Leonard Bridgeman. (Sampson Low and Martin). 42s.

A subtitle on the loose cover of this, the twenty-sixth annual issue of *Jane's All the World's Aircraft*, correctly describes the contents of this monumental work: "a complete record of aeronautical progress throughout the world during the past year." The immense mass of detailed information is made more interesting and more accessible by classification under five headings: for each nation there is a historical summary of civil aviation; a description of its flying service; aircraft; aero engines; and airships. The last section has only seven pages, four being devoted to Germany.

The preface is a valuable summary of air armament tendencies, and the editor points out that although there are no details of types of aircraft at present under construction or only just having reached flight test, these do not "represent aeroplanes which would be at all likely to be weapons in any immediate war." Those illustrated and described are of much greater importance, as being the standard equipment of the flying forces of each country.

Reference is also made to the growth of national aircraft industries, the elimination of obsolete types, rapid increase in speeds of bombers and fighters, and the high proportion of new types in most countries—evidence of rapid rearmament. Out of 616 aeroplanes described, 249 did not appear in the last issue of this book.

It must not be thought that the hundreds of illustrations are chiefly side elevations of aircraft or frontal views of engines. There is a large number of photographs of airports, and excellent plans of the airlines of each country and the world in general, while the section describing Service flying has many fine views of aircraft in formation, either on the ground or in the air.

Some of the aircraft described weigh about 20 tons, and some of the engines develop 1,000 h.p. These figures make it the more interesting to look back at some of the earliest issues of the book in which are to be found details of an A. V. Roe triplane powered with an 8 h.p. Jap engine; and in those days there was an aeroplane which weighed 160 lb. without pilot, but including engine, the price of the whole being £250. Even in 1910 there were engines bearing the name of De Havilland; and Wolseley's made an engine almost as good to look upon as their famous Viper.

The compilation of this volume must be an immense labour, and the editors are to be congratulated upon a production which is both a valuable work of reference and an interesting collection of reading matter.

CORRECTIONS

THE LIFE OF JOHN RUSHWORTH, EARL OF JELLICOE.

There was a printer's error in the title of this biography in the "Reviews of Books" published in the JOURNAL for November, 1936, p. 915.

MARLBOROUGH: HIS LIFE AND TIMES.

In the Review of this book in the JOURNAL for November, 1936, p. 917, line 12; for "Oudenarde" read "Ramillies."

ADDITIONS TO THE LIBRARY

GENERAL

HISTORY OF INDIA—FROM THE EARLIEST TIMES TO THE PRESENT DAY. By Sir George Dunbar. 12s. 6d. 8vo. (Ivor Nicholson & Watson, Ltd.).

EUPHRATES EXILE. By A. D. Macdonald. 7s. 6d. 8vo. (G. Bell & Sons, Ltd.). Presented by the Publisher.

THE CONQUEST OF MOROCCO. By Vice-Admiral C. V. Usborne, C.B., C.M.G. 18s. 8vo. (Stanley Paul & Co., Ltd.). Presented by the Publisher.

JAPAN'S FEET OF CLAY. By Freda Utley. 15s. 8vo. (Faber & Faber, Ltd.). Presented by the Publisher.

ENGLAND. By W. Dibelius. 7s. 6d. 8vo. (Jonathan Cape, Ltd.).

THE FIRST OF THE LEAGUE WARS—ITS LESSONS AND OMENS. By Major-General J. F. C. Fuller. 10s. 6d. 8vo. (Eyre & Spottiswoode). Presented by the Publisher.

MODERN WAR AND DEFENCE RECONSTRUCTION. By Captain J. R. Kennedy. 12s. 6d. 8vo. (Hutchinson & Co.). Presented by the Publisher.

EPISODES OF THE GREAT WAR. By John Buchan. 8s. 6d. 8vo. (T. Nelson & Sons, Ltd.). Presented by the Publisher.

HINDENBURG—THE WOODEN TITAN. By J. W. Wheeler-Bennett. 21s. 8vo. (Macmillan & Co., Ltd.). Presented by the Author.

GENERAL GRANT'S LAST STAND. By H. Green. 12s. 6d. 8vo. (Charles Scribner's, Sons). Presented by the Publisher.

HERO OF THE RESTORATION—A LIFE OF GENERAL GEORGE MONCK, 1ST DUKE OF ALBEMARLE. By Oliver Warner. 12s. 6d. 8vo. (Jarrolds).

POLITICS FROM INSIDE. By Rt. Hon. Sir Austen Chamberlain. 18s. 8vo. (Cassell & Co.).

I SEARCH FOR TRUTH IN RUSSIA. By Sir Walter Citrine. 10s. 6d. 8vo. (George Routledge & Sons, Ltd.).

WAR MEMOIRS. Vol. VI. By David Lloyd George. 21s. 8vo. (Ivor Nicholson & Watson).

THE EMPIRE IN THESE DAYS. By R. Coupland. 7s. 8d. 8vo. (Macmillan & Co.).

TITLES AND FORMS OF ADDRESS—A GUIDE TO THEIR CORRECT USE. 4th Edition. 3s. 6d. 8vo. (A. & C. Black, Ltd.). Presented by the Publisher.

TURKESTAN SOLO. By E. K. Maillart. 8vo. (Putnam). Presented by Captain T. P. Milne-Horne.

THE STORY OF SAIL. By G. S. Laird Clowes. 10s. 6d. 8vo. (Eyre & Spottiswoode).

THE TRAVELS OF PETER MUNDY IN EUROPE AND ASIA, 1608–1667. Vol. V. Edited by the late Lt.-Col. Sir R. C. Temple and Lavinia M. Anstey. 8vo. (Hakluyt Society).

THE MENACE OF JAPAN. By T. O'Conroy. 3s. 6d. 8vo. (The Paternoster Library).

MAN MAKES HIMSELF. By V. Gordon Childe. 7s. 6d. (Watts & Co.).

THE ANGLO-EGYPTIAN SUDAN FROM WITHIN. Edited by J. A. de C. Hamilton 10s. 6d. 8vo. (Faber & Faber). Presented by the Publisher.

GREAT BRITAIN AND PALESTINE, 1915–1936. Information Department Papers, No. 20. 3s. 8vo. (The Royal Institute of International Affairs).

BORDERLANDS OF LANGUAGE IN EUROPE AND THEIR RELATION TO THE HISTORIC FRONTIER OF CHRISTENDOM. By Vaughan Cornish. 6s. 8vo. (Sifton Praed & Co.). Presented by the Publisher.

NAVAL

IMPORTANCE OF THE MACHINE GUN IN NAVAL WARFARE. By Lieut.-Commander Willy Salicath, R.D.N. 8vo. (Dansk Industri Syndikat Compagnie Madsen A/S, Copenhagen). Presented by the Author.

THE LIFE OF LORD NELSON. By Colonel J. M. Tucker. 8vo. (Adams & Gee). Presented by Lieutenant W. J. Wingrove, R.N.

DEEP DIVING AND SUBMARINE OPERATIONS—A MANUAL FOR DEEP-SEA DIVERS AND COMPRESSED AIR WORKERS. Compiled and edited by R. H. Davis, Managing Director of Siebe, Gorman & Co., Ltd. 18s. 8vo. (The St. Catherine Press). Presented by Messrs. Siebe, Gorman & Co.

THE ANATOMY OF NEPTUNE. Edited by Brian Tunstall. 12s. 6d. 8vo. (George Routledge & Sons, Ltd.). Presented by the Publisher.

JANE'S FIGHTING SHIPS, 1936. Edited by F. E. McMurtrie and R. Perkins. 42s. Folio. (Sampson Low, Marston & Co., Ltd.). Presented by the Publishers

THE LETTERS OF ROBERT BLAKE. Edited by J. R. Powell. 8vo. (Naval Records Society).

MILITARY

DER CHEMISCHE KREIG. Band I: Militarischer Teil. Edited by Dr. Rudolf Hanslian. 8vo. (E. S. Mittler & Sohn, Berlin). Presented by the Publisher.

GENERAL FOCH AT THE MARNE. By C. le Goffic. 8vo. (Dent & Sons). Presented by Major D. Whiteside.

RÈGLEMENT DE L'INFANTERIE. Deuxieme Partie—Combat. By Ministère de la Guerre. 1s. 8vo. (Charles-Lavauzelles, Paris).

DIARY OF LORD EDWARD SOMERSET, 1815–1817. Copied in typescript from the original. Presented by W. H. B. Somerset, Esq.

MY SEVENTY-FIVE. By P. Lintier. 7s. 6d. 8vo. (Peter Davies).

CÆSAR IN ABYSSINIA. By G. L. Steer. 12s. 6d. 8vo. (Hodder & Stoughton).

MESOPOTAMIA—THE LAST PHASE. By Lieut.-Colonel A. H. Burne. 5s. 8vo. (Gale & Polden, Ltd.). Presented by the Publisher.

COMBAT INTELLIGENCE. By Major E. E. Schwien. $2.00. 8vo. (The *Infantry Journal*, Washington). Presented by the Publishers.

REGULATIONS FOR THE TERRITORIAL ARMY, 1936. 2s. 6d. 8vo. (H.M.S.O.).

A COPY OF PAPERS RELATING TO MUSTERS, BEACONS, SUBSIDIES, ETC., IN THE COUNTY OF NORTHAMPTON, A.D. 1586–1623. Edited by Joan Wake, with an Introduction by John E. Morris. 8vo. (Northamptonshire Record Society). Presented by Miss E. Hughes.

REGIMENTAL HISTORIES

THE HISTORY OF THE RIFLE BRIGADE IN THE WAR OF 1914–1918. Vol. II: January, 1917–June, 1919. By Brig.-General W. W. Seymour. Crown 8vo. (The Rifle Brigade Club, Ltd.). Presented by The Rifle Brigade Club.

LIST OF OFFICERS AND OTHER RANKS OF THE RIFLE BRIGADE AWARDED DECORATIONS OR MENTIONED IN DESPATCHES FOR SERVICES DURING THE GREAT WAR. Compiled by Lieut.-Colonel T. R. Eastwood, D.S.O., M.C., and Major H. G. Parkyn, O.B.E. 8vo. (The Rifle Brigade Club, Ltd.). Presented by the Rifle Brigade Club.

THE ROYAL CANADIAN REGIMENT, 1883–1933. By R. C. Fetherstonhaugh. $6.00. 8vo. (Gazette Printing Company, Montreal). Presented by the Regiment.

THE WELSH REGIMENT OF FOOT GUARDS, 1915–1918. By Major C. Dudley Ward. 5s. 8vo. (John Murray). Presented by Colonel M. B. Beckwith-Smith, D.S.O., M.C.

HISTORY OF THE 5TH BATTALION (PATHANS) 14TH REGIMENT (LATE 40TH PATHANS). By Major R. S. Waters. 8vo. (James Bain, Ltd.). Presented by the Publisher.

THE 38TH FOOT IN THE WEST INDIES, 1707–1711. By Lieut.-Colonel M. Savage. Pamphlet. Presented by the Author.

AIR

AIR NAVIGATION REGULATIONS HANDBOOKS. No. 1, General Procedure; No. 3, Austria. Issued by the Air Ministry. 6d. Pamphlet.

JANE'S ALL THE WORLD'S AIRCRAFT, 1936. Compiled and edited by C. G. Grey and Leonard Bridgman. 42s. Folio. (Sampson-Low). Presented by the Publisher.

AIR STRATEGY. By Lieut.-General N. N. Golovine. 7s. 6d. 8vo. (Gale & Polden, Ltd.). Presented by the Publishers.

Embroidery

Pipe Banners,
Colour Belts,
Drum Banners,
Regimental Colours,
Drum-Major's Sashes,
Etc.

Established 1810

DRUMS

(General Military Catalogue on application)

Henry Potter & Co.

38/38, WEST STREET,
CHARING CROSS ROAD, W.C.2

London

Specialists

Drums,
Flutes,
Bugles,
Pipes,
Staffs,
also
Repairs,
Etc.

NOW READY.

THE

CAVALRY JOURNAL

Published under the authority of the Army Council, under the direction of Lieut.-General Lord BADEN-POWELL, G.C.M.G., G.C.V.O., K.C.B., D.C.L., LL.D., Field-Marshal Sir P. W. CHETWODE, Bt., G.C.B., O.M., G.C.S.I., K.C.M.G., D.S.O., General Sir GEORGE DE S. BARROW, G.C.B., K.C.M.G., Lieut.-General Sir A. E. W. HARMAN, K.C.B., D.S.O., Brigadier E. F. NORTON, D.S.O., M.C., and Major-General T. T. PITMAN, C.B., C.M.G., (Managing Editor).

PUBLISHED QUARTERLY, Price 5s. net.

No. 103. JANUARY, 1937.

CONTENTS.

Two Cavalry Episodes in the Palestine Campaign, 1917-1918. Part II. By General Sir George De S. Barrow, G.C.B., K.C.M.G. (*Maps*). The Third Cavalry Division at Loos. By Colonel T. Preston, M.C., T.D. (*Maps*). Sudan Patrol. Part II. "The Afak Atwots." By Major A. J. R. Lamb, D.S.O. (*Illustrated and Maps*). Beersheba Beitunia Bethhoron, stopping at Bishops Stortford. Japanese Consolidation in Manchukuo. By Captain O. L. Boord, M.C., 10th Royal Hussars. A Notable Cavalryman of the Franco German Frontier. "More Recollections of a Prussian Hussar." By Lieut.-Colonel Baker, D.S.O., F.R.G.S., F.R.Hist.S. The Knight. By Fletcher Pratt. Old Cavalry Recruiting Posters. By J. Paine. (*Illustrated*). First Impressions. By Eric Wakeham. Isma-Eel Shot the First Arrow: Migrating, Hunting, Raiding with the Bedouin. By Carl R. Raswan, Author of "The Black Tents of Arabia." (*Illustrated*). Spirit of Service. By Major General Sir John Moore, K.C.M.G., C.B., F.R.C.V.S. Longevity in Horses. By Major General Sir Nevill Smyth, V.C., K.C.B. (*Illustrated*). Tendwabhai. By Captain R. K. M. Battye. Hand-to-Hand with a Boar. By Hindu Horseman. A Black Panther. By Colonel F. A. Hamilton, late 3rd Cavalry, I.A. Notes. Obituary. Home and Dominion Magazines. Foreign Magazines. Recent Publications. Sporting News.

ALL SUBSCRIPTIONS should be sent to, and all copies obtained direct from
The Royal United Service Institution, Whitehall, London, S.W.1.

REPAIRS TO REGIMENTAL COLOURS

The Royal United Service Institution can undertake Repairs to Regimental Colours, Standards, Banners, etc., by skilled workers.

ESTIMATES AND EXPERT ADVICE CAN BE GIVEN.

BARCLAYS BANK

LIMITED

EDWIN FISHER, Chairman.
WILLIAM MACNAMARA GOODENOUGH, Deputy-Chairman.
HUGH EXTON SEEBOHM, Vice-Chairman.
General Managers: A. W. Tuke, W. O. Stevenson, N. S. Jones.
Foreign General Manager: B. J. Foster.

Statement of Accounts

31st December, 1936.

LIABILITIES	£	£
Current, Deposit and other Accounts, including Reserve for Income Tax and Contingencies and Balance of Profit and Loss	417,886,649	
Balances in Account with Subsidiary Banks	11,651,767	
		429,538,416
Acceptances and Endorsements, &c., for account of Customers		9,266,151
Paid-up Capital		15,858,217
Reserve Fund		10,250,000

ASSETS	
Cash in hand, and with the Bank of England	51,909,017
Balances with other British Banks and Cheques in course of collection	14,721,891
Money at Call and Short Notice	26,318,800
Bills Discounted	59,248,252
Investments	109,367,473
Investments in Subsidiary Banks (at cost, *less* amounts written off): The British Linen Bank—£1,240,360 10s. Stock	3,721,081
Union Bank of Manchester Limited—300,000 Shares of £5 each, £2 10s. paid	750,000
Other Subsidiary Banks—(including fully paid Shares and 500,000 "B" Shares of £5 each, £1 per Share paid up, in Barclays Bank (Dominion, Colonial and Overseas) and 1,000,000 Shares of £1 each, 5s. per share paid up, in Barclays Bank (France) Limited)	2,498,341
Advances to Customers and other Accounts	179,655,011
Liability of Customers for Acceptances and Endorsements, &c.	9,266,151
Bank Premises and Adjoining Properties (at cost, *less* amounts written off)	7,456,767

HEAD OFFICE:

54, Lombard Street, London, E.C.3.

Over 2,100 Branches in England and Wales.

"The R.U.S.I. Journal" is published on the 15th day of February, May, August and November of *each* year.
Registered for Transmission to Canada by Canadian Magazine Post.